ERNEST BORN

OCT

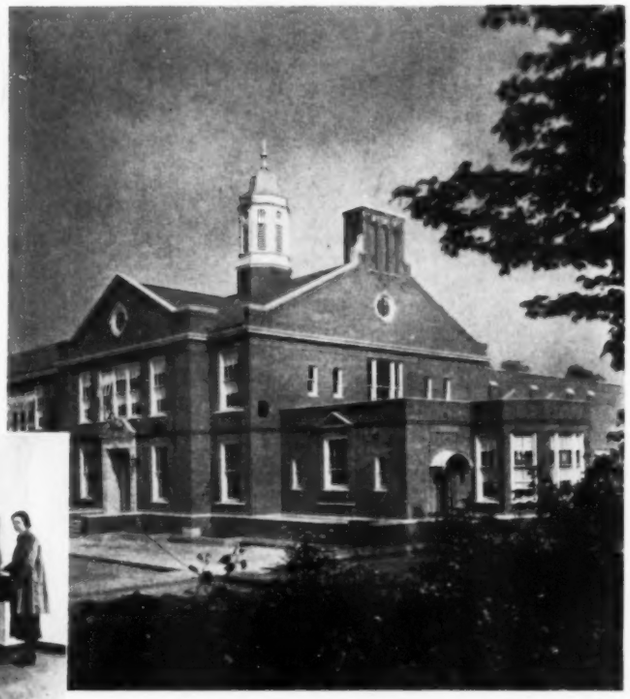
THE ARCHITECTURAL RECORD

1936

10

HOUSES • APARTMENTS • INTERIORS

In Discussing His Problems In This New School Eugene Ward Says . . .



James Russell Lowell School, Teaneck, N. J., Smith and Ward and Norman T. Anthony, Architects, equipped with AUSTRAL Windows, Wardrobes, and Blackboard Fixtures.

AUSTRAL Multi-Use Blackboard Fixture makes blackboard space more flexible.

AUSTRAL Multi-Use Wardrobe results in increased economy and more room.

AUSTRAL Windows afford perfect ventilation without draft.

"THE window openings in the foregoing rooms are provided with frames and sash equipped with Austral Window Equipment, and the wardrobes in classrooms are also of the Austral manufacture. The use of these Austral windows and wardrobes has permitted the heating and ventilating system to operate in a satisfactory manner in entire accordance with the intent and theory of the system designed by us.

"The classrooms and music room are equipped with Austral Multi-Use Blackboard Fixtures in lieu of blackboards. The Lowell School was the first structure to be equipped with this new type of blackboard, and the idea of its construction originated during conferences we had with the supervising principal of schools of Teaneck. We believe this type of blackboard fixture to be an outstanding advancement in the field of improved school equipment."

These comments are representative of the judgment of many prominent architects of America's finest schools.

AUSTRAL SALES CORP.

101 PARK AVENUE, NEW YORK CITY

THE ARCHITECTURAL RECORD

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THOROUGH pickling of the sheets goes far to insure the tight bonding of the zinc coating of Bethlehem Galvanized Sheets. The use of prime western spelter and careful fluxing and control of temperatures at the galvanizing pot further contribute to both the tightness of the coating and to other good properties.

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BARTON P. JENKS, JR.

EARL G. VON STORCH

WALLACE K. HARRISON

J. ANDRE FOUILHOUX

LE CORBUSIER

ALFRED ROTH

MARCEL BREUER

EMIL ROTH

BARTON P. JENKS, JR., Supervising Architect for "Westacres" near Pontiac, Michigan. The houses, including one acre of land, sell for $4,400 (pages 253-274). Jenks is a graduate of Harvard and the Ecole des Beaux-Arts.

EARL G. VON STORCH was responsible for the site plan and the design of houses at Westacres (pages 253-274). Formerly instructor in architectural design at University of Virginia. Von Storch was assigned the Michigan project after working with FERA.

WALLACE K. HARRISON, architect for Rockefeller Apartments (pages 302, 303) in association with J. André Fouilhoux.

J. ANDRE FOUILHOUX, architect associated with Wallace K. Harrison as designers of Rockefeller Apartments (pages 302, 303).

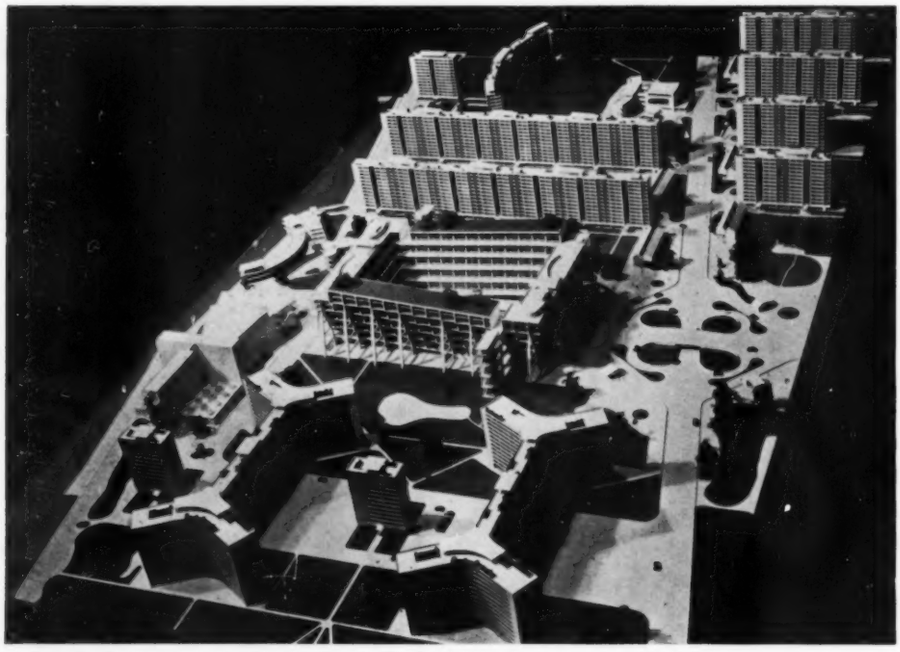
LE CORBUSIER designed apartment house in Paris (page 313).

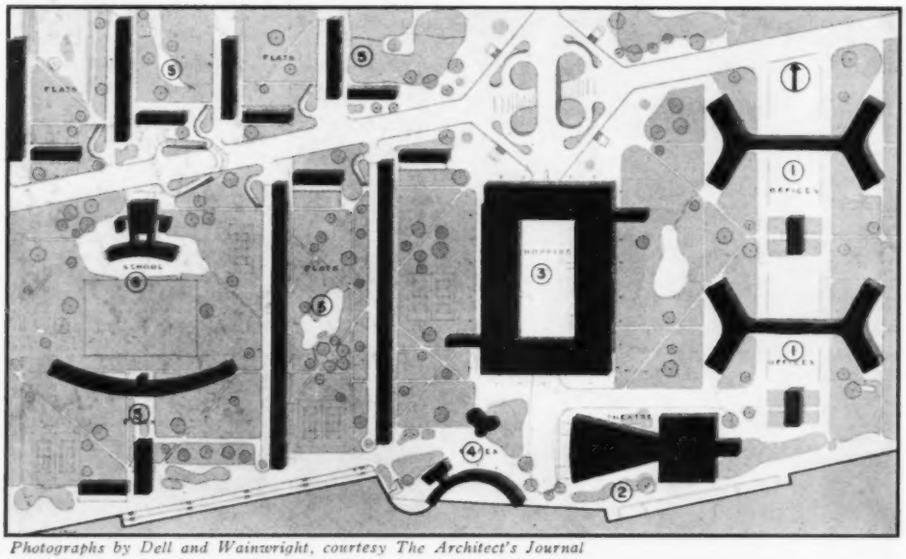
ALFRED ROTH, architect of Zurich who with his cousin, Emil Roth, and Marcel Breuer designed apartment house for "simplified and pleasant living" (pages 287-294).

MARCEL BREUER, architect and famed as furniture designer (pages 287-294, 306).

EMIL ROTH, associated with his cousin, Alfred Roth, and Marcel Breuer in design of apartment group in Zurich (pages 287-294).

NEWS OF THE MONTH





Photographs by Dell and Wainwright, courtesy The Architect's Journal

PLAN

1. *OFFICES AND FACTORIES have light, air and are placed in parked areas; electricity eliminates industrial blight.*

2. *THEATER is accessible to shops, amusements, housing, and seashore.*

3. *SHOPPING CENTER employs novel design to achieve concentration.*

4. *CAFES, RESTAURANTS AND GAMING have a section of their own.*

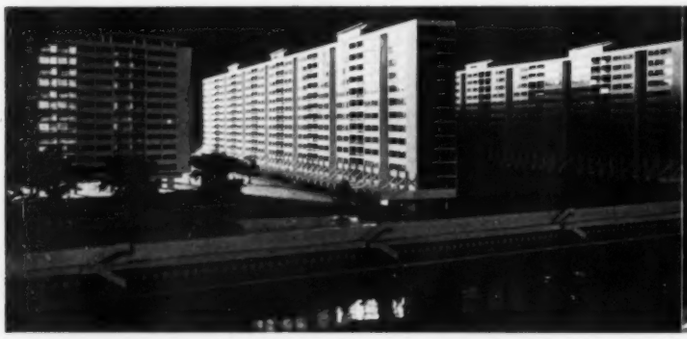
5. *HOUSING of the multi-story type is set in generous parks and surrounds school and sports field.*

6. *SCHOOL, designed to serve social as well as educational purposes, is surrounded by parks, sports fields and housing.*

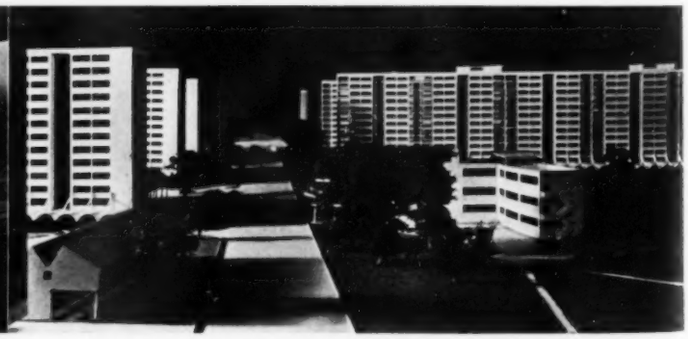
TRAFFIC. Congestion is avoided by making under-and-over crossings. At intervals, between the main traffic crossings, secondary subways are provided, to enable cars to double back, without holding up fast traffic on the road. In this way no limit is imposed upon speed, but safety is assured, particularly for pedestrians, because paths for walking are separate from car traffic. All trains are below ground.

PARKING. The housing is carried on columns; cars are parked on the ground under the housing and garaged in underground garages, approached by concrete ramps. Secondary roads give access to the flats and offices.

WATERSIDE. The continuous promenade and parkland along the sea is free from traffic routes, and is reserved for pleasure and sport.



The stilted apartments, seen from the highly-developed ocean front, with their dressing rooms under the promenade.



Residential area with shops and school on either side of the east-west thoroughfare.

BRITISH ARCHITECTS SHAPE FERRO-CONCRETE UTOPIA

When F. R. S. Yorke and Marcel Breuer, British architects, finished this model of an ideal modern town, they achieved something far more than advertising copy for ferro-concrete. Commissioned last spring by the British Cement and Concrete Association to create a project showing the adaptability of concrete to modern demands, they ended up with "the principle rather than the exact arrangement" of the city of tomorrow. While the use of concrete is apparent in the entire model, the elements which chiefly make it notable are (1) the logic of its schematic arrangement, (2) the strength and clarity of its architecture, and (3) the striking competence of the model itself.

The problem was a common one—to plan a city fit for human habitation; to free it from congestion, "to let sunlight and clean air penetrate freely . . . so that it might become a pleasant and healthy place to work and live in." Messrs. Yorke and Breuer did not view this problem simply as one of placing buildings in a pleasant pattern. The modern city is an increasingly complex organism: they realized they must first of all "define clearly the various functions of the town and make possible their exact organization."

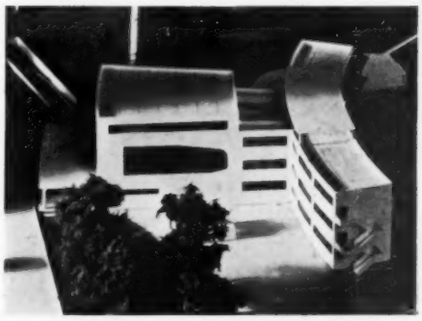
The architects have indicated this segregation of function in the model: the business area extends eastwards into the industrial area—manufacturing and distributive agencies; west of the business area is the central shopping and theater district; beyond this, the apartments, schools and neighborhood stores, with sparser housing as the open country is approached. But because of the theoretic nature of the project and the limitations of the model itself, the architects—"who wished first to demonstrate the interrelation of the several parts of the town"—were forced (1) to make a schematic rather than specific solution and (2) to treat only a typical sector of the town.

The outstanding characteristic of contemporary life is the trend towards increasing mobility—not only of people, but of things, buildings, cities themselves. Up to a certain point, the Yorke-Breuer study reflects this. Having isolated the various functions of the town, they have organized them by means of a carefully-studied transportation system (though here again the condensed character of the model limited them). Motor and pedestrian traffic is segregated, with local and long-distance motor traffic again subdivided. An elaborate system of underground garages, together with stilted buildings, everywhere provides ready access to motors. The airdrome—indicated as being to the north—is connected to the city by means of an underground railway, while the industrial area is presumably served by rail, sea and motor.

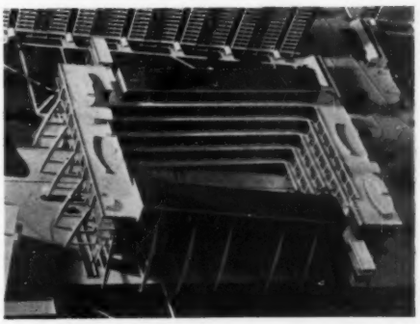
However, the implications of mobility do not stop here; the buildings themselves must increasingly be mobile—demountable with a high salvage ratio. It is here, perhaps, that architects Yorke and Breuer were stopped by the basic limitations of their project—to establish ferro-concrete as the material of tomorrow.

The buildings often achieve a freshness not possible in traditional materials; in some cases—the shopping center for example—an entirely new structural form has been evolved to meet the desired function.

A simple form—lobby, auditorium and stage—the theater overlooks a gay seaside plaza.



The school centers the residential section, facing sports fields and parks.



The shopping center throws tradition overboard. In plan and elevation a spiral, its courtyard profile steps back for increased light; buttresses carry the corresponding overhang outside.

Increasingly familiar to Americans is this cloverleaf intersection at north end of shopping center.

Facing the theater and the sea is this delightful group of restaurants, dance places, and cafés.

NEWS OF THE MONTH

FAIRS: COUNTRY TOWN IN SWEDEN SHOWS THE WORLD

With "Leisure" as its theme, ancient Ystad rings the bell.

In a little provincial town dating from the Middle Ages was staged this summer an exposition whose content and general high level of competence would shame the great cities of the world. Fairs must have a reason, said the Ystad people when they first talked of having one. So the Ystad city fathers allied themselves with the *Svenska Slöjdföreningen*—a national council of sports, hobby, arts and crafts clubs—who had a theme which was basic indeed: *the proper uses of leisure.*

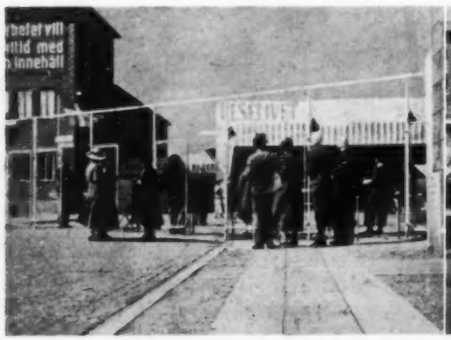
This council, through its president, Gregor Paulsson, well-known Swedish writer, furnished the basic theme; Ystad gave up its town park; and a Fair Committee, with Hans Westman as supervising architect, was set up to execute the plans.

Before any planning was begun, however, the subject was first carefully analyzed. Was *fritiden*—leisure time—a valid social theme for a fair? Certainly, said Mr. Paulsson; it was indeed "the very life condition of democracy. As the English sociologist Bradford said, people who are too tired to think, read, or discuss a problem with sustained interest, necessarily turn to the cheap substitutes for these things. They become easy victims for suggestions and emotional influences, surrendering unconditionally to the demagogues, the war promoters, and the sensational press. A democratic government presupposes intelligent, cultured people as voters, and human beings can only develop their intelligence and become cultured if they have the means, security, and the time."

Gotthard Johansson, editor and head of the Fair Committee, seconded Paulsson. "It can never be unimportant how people spend one-third of their lives. . . . Leisure time has become a social problem because society cannot be indifferent as to how its members spend it." This interest takes different forms according to the structure of the State. In fascist countries "leisure time is considered as belonging to the State and is expressed by such organizations as the Italian *Dapo Lovoro* and the German *Kraft durch Freude.*" But a democracy conceives of *leisure time as free time:* citizens may use it as they will but democracy must promote those uses of leisure time which are "valuable to the individual and, in the final analysis, also valuable to society."

Fritiden, then, was valid as a theme: but was it a sound commercial venture? Of course, said Mr. Johansson, pointing out that "the automobile industry in America was primarily a leisure-time industry, as were the movies and the radio." Furthermore, it was possible to analyze leisure time by types of employment — industrial, professional, agricultural, housekeeping — as well as by the day, week, year and the life span itself: to discover and catalogue the means that each employed: to attract commercial interests in each of these fields.*

* All exhibition material was contributed by the manufacturers but the exhibits were designed and executed by the architectural staff as part of the general plan.

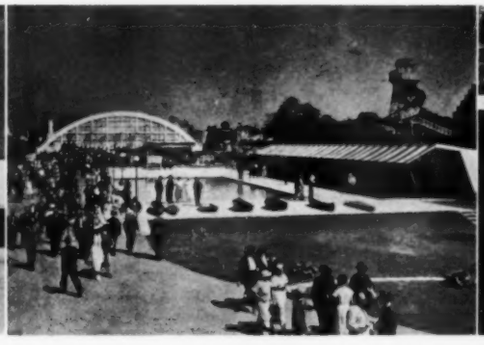


No dramatics at the entrance; you go through a plain wire fence . . .

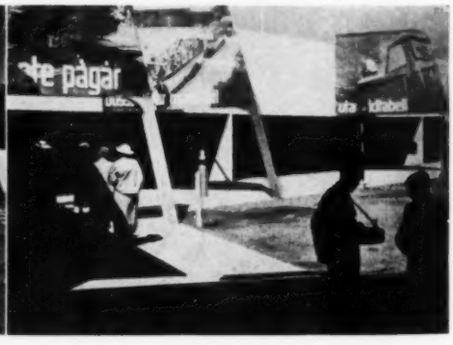
and find Fair Office, Information and Check Rooms neatly housed at your right.

Impedimenta aside, you can study the "Statement of the Problem" in brilliant photomontage.

The Press, one sheet for each paper, clamors for your attention in 2-story editions.



Beyond, the main vista opens: pool and water sports center, with wood-arched café beyond.



But meanwhile, on your left, the travel exhibit. Here, exposition design touches a new high.

Integration was the controlling factor in this plan—it must be so organized as to permit the visitor to grasp its message without confusion, haste or weariness. But the architect Hans Westman was faced with the necessity of adapting the directors' theoretic plan to the actual limitations of an irregular market square in a medieval village.

Low, simple and compact, the entire project is in scale: and it has a unity of appearance which comes only from centralized design. The plan permits an orderly and easy flow of traffic —the entire fair may be covered without effort in a day. At the same time, there is a concentration of informative material which makes each exhibit worthy of detailed study.

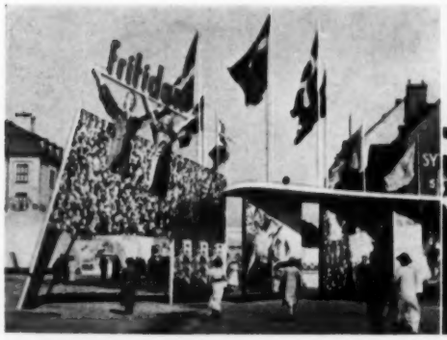
The buildings are as they should be—bright (there is a wide use of color), newsy and ephemeral. They are distinguished by their confident use of synthetic materials—plastics, metal alloys, glass and cloth—and by their use of photomontage, which here becomes an integral part of exterior design.

There is no pretense anywhere: this is clearest in the "Midway," an Alice-in-Wonderland affair of distorted perspective and painted wallboard. They were built for one summer's pleasure and instruction and in every line they show it.

KEY TO THE PLAN

1. Statement of Problem.
2. Public Education.
3. Travel.
4. Book.
5. Radio.
6. Press.
7. Hobbies.
8. Sports.
9. Sports.
10. Water Sports and Pool.
11. Main Plaza.
12. Movies.
13. Restaurant and Dancing.
14. Midway.
15. Boy Scouts.
16. Leisure in the Home.
17. Home Crafts.
18. Model Farmhouse.
19. Model Week-end House.
20. Modern Aids to Leisure.
21. Camping.
22. Refreshments.
23. Dairy Products.

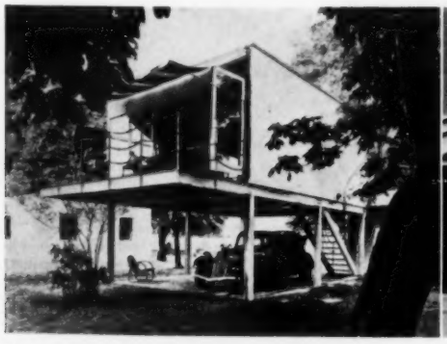
Photographs by Voltelen and "Form"



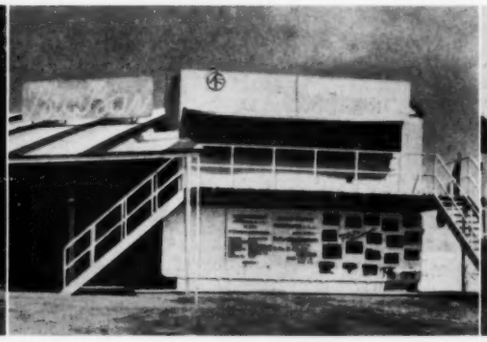
The arch is what it seems—wallboard, photographs and varnish.

Little shops—well-designed, standardized—carry souvenirs such as you never see in U. S. A.

One of the famous Cooperatives displays books for leisure time; beyond it, the radio.



This week-end house is only one of a series in the wooded Housing Section, at extreme left.



Ubiquitous news reels are housed in a prefabricated structure next to the café . . .

while a midway, such as American villages never dreamed of, bids for your "Fritiden."

NEWS OF THE MONTH

Spear aloft, Italia plays host . . . .

Photo by Crimella-Milano

. . . . to exhibit of peacetime arts.

ARCHITETTURA FASCISTI

Two views of the exhibition rooms of the recently-closed International Exposition of Decorative Arts, Industrial Design and Architecture. The Exposition, which was "endorsed by Mussolini himself," made a wide use of photography, glass and plastics. Most of the countries of the world were represented in the architectural section (shown above) where hundreds of recent buildings were shown in photo murals.

Before and . . . .

Photos courtesy PWA

. . . . . After PWA

ENOUGH TO MAKE ANY ONE SICK

For 43 years this Victorian firetrap served as a hospital in Madera County, California. The new 42-bed structure, made possible by a PWA grant, recently replaced it.

ANONYMOUS COMPLAINT

Mild as they were, New York City's tenement house laws have never been welcomed by the city's landlords. But a new law effective January 1, 1937 goes much further than its predecessors in establishing minimum requirements in all multi-family dwellings, involving such structural features as metal stairs, fire-resisting stair halls, modern fire escapes, etc. Although causing a large increase in modernization work on the one hand, it also finds many small landlords unable to meet the expenditures required. And the plight of the latter is eloquently—though ungrammatically—expressed in the following letter to *Real Estate Record*:

"Dear Sir:

"Its a shame how the poor Landlord is continually pestet and submit from this Ten. Dep., since 1901 they molest the Owners at the same houses, and we pay Taxes for that. This odious Dep. should be removed, it has so Impudent Pull, If it is true, to compel the tenants to move out, even if they satisfied to reside, whit the pretence, the house is not situate to live (Condemn) if the Owner can not afford the work what this Dep. compel to do, steel the peoples property after it was hard it to earn, this is the dirtyest trick since existence of this Dep. and the city renounce rather the Taxes, and let the rabble to destroy the property, what? The Mortgage, real estates Companys has no obyection to go against this Dep. Nobody kan force the tenants to reside, and if the house is empty, the Owner has the damage, if it comes to go against, I be very glade, I pay the Taxes, Int. eetc. 36 years and make my living whit that house, if they throw me out of my property they don't support me.

"Respectfully
"One Poor Landlord.

"I desire to see this artikel in some newspaper."

FINDS HOUSING PROJECTS MOST "MODERN"

PWA and RA housing projects, says Lewis Mumford, are the only Government operations which show "even a glimmer" of modern design. Mr. Mumford "was surprised at the large number of sensible, straightforward designs and at the generally high level of the work."

F.A.E.C.T. INTO A.F. OF L.

Aristocratic Newport was last month the scene of negotiations between A. F. of L.'s long-established International Federation of Technical Engineers and the Federation of Architects, Engineers, Chemists and Technicians. An agreement of unity was reached, whereby all F.A.E.C.T. chapters will be accepted and granted charters as locals of the A. F. of L. The agreement was made possible by a decision at F.A.E.C.T.'s national convention last April to negotiate for affiliation. The agreement will be placed before the membership in a referendum.

NEW TALENT SOUGHT BY FAIR BOARD

To achieve "an imaginative and festive quality" in its buildings, New York's 1939 World's Fair last month announced a competition for one of the Fair buildings. Although Grover Whalen, president of the Fair Corporation, announced that the purpose of the contest was "to discover valuable, latent talent . . . particularly among the younger and unknown architects," the program limits all entrants to registered architects with offices or residence in the New York metropolitan area. A first prize of $1,000 plus contract for one building; second prize of $750; third prize of $500; and twenty honorary mentions of $100 each will be awarded.

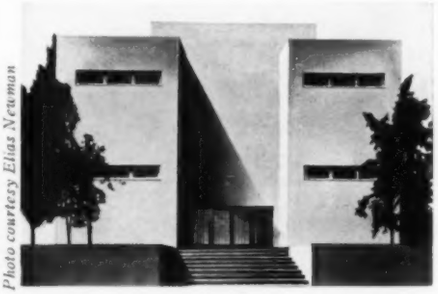


Photo courtesy Elias Newman

QUIET CORNER IN A TROUBLED LAND

The new museum at Tel-Aviv, Palestine, which houses the rapidly growing collection of the Palestine Art Association. Made possible by the bequest of the late Maurice Lewin, the new building was recently completed in all-Jewish Tel-Aviv, suburb of the ancient port city of Jaffa. The museum has recently acquired an American collection, work of six American-Jewish artists; and Elias Newman, representative of the Museum, is now touring this country on behalf of the American Friends of Tel-Aviv Museum Society.

PICTURES CAN'T LIE BUT LIARS CAN PICTURE

A widely circulated photo of lean cows grazing before Holabird and Root's new North Dakota Capitol met the charge that the picture was faked. But investigation forced the *Fargo* (N.D.) *Forum* to admit that "the picture of these cows was not, as the *Forum* believed and said when it first branded this shot as a faked picture of the drought, superimposed on a picture of the Capitol itself. It is an honest picture."

FLAT ROOFS TRIUMPH IN CANADA

Recently closed was the Ontario Government's small house competition. Open only to Ontario architects, the contest aimed at securing the best minimal solutions for a family of 5 and one of 8. Prizes were small and the use of the plans undisclosed but, exults *Architect and Building News*, "all six of the prize-winning designs have flat roofs."

T. E. LAWRENCE: SOLDIER AND ARCHITECT

Somewhere on the outskirts of Oxford, a Nonconformist church is embellished with the carvings of T. E. Lawrence, that enigmatic figure who gallantly conquered the Arabs for British imperialism only to die on a motor cycle in an English lane. Lawrence's deep interest in architecture—especially medieval architecture—was more than a romantic whim; according to a recent biography by Vyvyan Richards, Lawrence was an admirer of the ideology of William Morris and a craftsman of the first water. While on one of his expeditions in Syria, his need of a European bathroom led him to build one; "he melted soft Roman glass, and constructed a luxurious bath with continuous walls, floor and ceiling from this ductile material."

HURRICANE-PROOF SHELTERS FOR FLORIDA WORKERS

Work on concrete shelters is being rushed in South Florida and the Keys that the disaster of last September—in which scores of lives were lost in the construction camps of the Florida Canal—will not be repeated. All public buildings receiving Federal loans or grants will be of reinforced concrete of stormproof design: they will serve as community shelters in an emergency.

PROGRESS OR REACTION AT PARIS NEXT YEAR?

Photo by Baranger

Wide World Photo

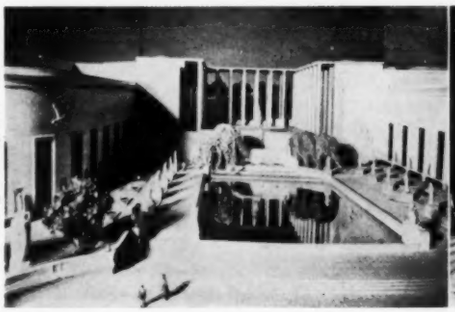
All that's chromium is not modern; and before it's over the 1937 Paris Exposition may well be the gravestone of that school of functional design which, for over a decade, has been the rallying point of the French architects. Louis Cheronnet, editor of "Art et Decoration," watches the technical reaction evidenced in the developing Exposition with unconcealed alarm. "The machine," says he editorially, "has never yet damaged the human spirit." On the contrary, by a proper use of it, "modern man faces a future in which the most practical kind of comfort will be combined with unostentatious luxury."

The school of reactionary designers (calling themselves Neo-Humanists) threatens the progress already made in architecture, M. Cheronnet charges. "Under cover of maintaining certain traditions—a return to humanity—they propose a reversion to a decorative morphology . . . which the rationalists many years ago disavowed." Theirs is "the art of the scenery designer, which by a choice of suggestive details and a diabolical mise-en-place" strives for dramatic effect. What place has this philosophy got in a modern industrial world, queries M. Cheronnet. How can an exposition designed by such men be expected to reflect the forces of progress? All functionalists—architects and designers—must unite to prevent technical reaction, he concludes.

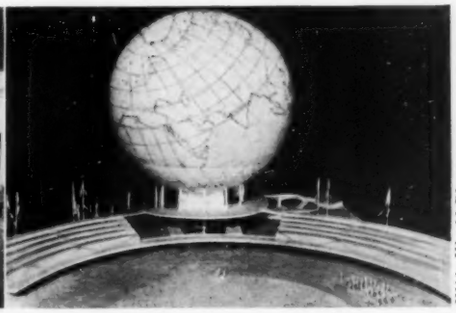
Photo by Baranger

From the air, the Paris Fair forms a giant cross. . . .

at one end of which is the remodeled Trocadero, in its "moderne" dress.



American Magazine of Art



Wide World Photo

The Museum of Modern Art is not "modern at all, but neo-humanist."

Auxiliary feature of the Fair is this stadium topped by a huge hollow globe.

NEWS OF THE MONTH

©Wide World Photo

BENEATH THESE ARCHES LIES A ROMAN ROAD

In demolishing the famous Adelphi Arches, backwater of London's last Bohemians, the traces of an ancient Roman Road were uncovered. The Arches, being razed to make way for a modern skyscraper, were the original of Dickens' "Thieves' Kitchens." This portion will be preserved. Aside from rats, over 700,000 bottles of wine were made homeless by the razing: they have been skillfully removed to other storage places.

MRS. STEELE MOVES IN

One of the 604 families who rushed in when PWA's Techwood Housing Project threw open its doors in Atlanta last month. First government-owned housing ever to be constructed in U. S. A., Techwood offers low-income families a three-room apartment for $23.47 including utilities. Qualifications as careful as any club prevent persons with high incomes getting in.

FOR INSANE CALIFORNIANS

Recently opened in Camarillo, California, was this magnificent first unit of the state's new institution for the insane. Already housing 1,000 patients, the plant will later be expanded to a 6,000 capacity. Departing from the grim tradition of the past, the new hospital will besides vegetables, dairy products, etc., provide wholesome rural environment for its inmates.

DEAN LAWRENCE'S ADDENDA TO OREGON COMPETITION

In recent discussions of the Oregon State Capitol Competition, criticisms of the winning design, the Jury, and Mr. Thomas' reports have been made. It would be more constructive and sporting to confine our efforts to the improvement of the Institute Code of Competitions and let what has been done rest in peace and good will, excepting as necessary in facing the facts of the case, that lessons may be learned from it.

Presumably all competitors entered the competition fully aware of the weaknesses of the program and the dangers of a nonprofessional Jury. As such juries go, this was well selected—one juryman being a bank president, a graduate of M.I.T. in architectural engineering and a former professional architect; another a prominent contractor accustomed to reading plans; and the third a lady of recognized taste.

It was the program itself which was at fault; and as it was based on the Code, an impersonal and frank consideration of its weaknesses should be helpful. The August number of THE ARCHITECTURAL RECORD, in the article on the competition, quoted a correspondent—"He (the architectural adviser) wrote a good, clean program and it was approved by the Institute sub-committee." There has been no suspicion of dishonesty or crookedness on the part of the Commission, Adviser or Jury, but the sub-committee of the Institute approved only *a part of the program*. This should have been stated in the program. Competitors, as well as your correspondent, were misled by the failure to do this. The writer does not believe any Institute Sub-committee on Competitions, or the National Committee, would approve a program in which the winner is not guaranteed adequate compensation.

The Secretary of the Institute and the Oregon Chapter, the writer understands, were notified by the sub-committee the extent of their approval. It would be of value to know just what part of the program this committee saw, and if the National Committee would have approved the program as written.

The writer has participated in several competitions, as competitor, adviser and juryman. From these experiences, he suggests the following changes in the Code to improve competitions. By them he believes the interests of the Owner as well as the competitor would be better protected, and architecture be improved.

1. The Institute Sub-committee on Competitions, in cases of local competitions, and the A.I.A. National Sub-committee on Competitions in cases of national competitions, should approve the selection of the Architectural Adviser and the Jury, as well as the program in toto, not in part.
   These committees of the Institute should be given larger responsibilities and duties. They are, in many cases, the only spokesmen the competitors have. Before deciding to enter the competition, competitors should have full assurance that approval by these committees cover all contractual relations, type of program, adviser and jury. If this cannot be given—better not have a competition. In the Oregon case, the competitors had no voice in selection of the Jury.
2. The purpose and justification of a competition should be to secure a distinguished solution. Mere selection of an architect could best be accomplished by direct selection. The Institute Committees should be instructed in the Code not to approve a program based on a preconceived solution, for the competitors should be given freedom to create as they desire.
   In the Oregon case, the mandatory north frontage of the building and the assumption that only property to the north could be acquired in the future robbed the State of an opportunity to secure many solutions which might have more wisely used the property.
   Incidentally, if any legal difficulty arises in this Oregon project, it will probably center around these two mandatory and needless restrictions, for the Legislature authorized a building for the present site only. This is cited to strengthen the case against needless restrictions. They may be dangerous legally, as well as detrimental to brilliant design.
3. The winner of a competition should, of course, be guaranteed adequate compensation, even though it may be necessary to allow the Owner to supplant him. This is certainly implied in the present Code. The Code should insist on this point, if it does not already do so.
4. The duties of the Adviser should be more clearly stated in the Competition Code. In open competitions, the writer believes he should not pass upon qualifications of competitors, or advise in selection of associates. To do either jeopardizes confidence in his impartiality. It was for such a reason that the Adviser, a few years ago, was barred from acting on the Jury.
5. The majority of the Jury should be architects. Without this, let us have no more

approved competitions.

When a profession gives a present of its collective services, as it does in such competitions as the Oregon case, it deserves at least a trained and competent jury to select the most "distinguished solution."

What would the State of Oregon have paid for the services of these 123 competitors, had it gone out to purchase that service? It is a case of the good old American habit of getting something for nothing. The architects fall for it because they love the challenge of solving problems, and the public laughs at them for doing it.

First—the rules of the game must be broad enough and sound enough to insure getting the best from each competitor.

Second—The umpire who interprets the rules must be fair and competent.

Third—the Judges **must be experts:** if they are not, in spite of good rules and umpires, the contest is a failure—the competitors giving all they have are rebuffed and the sport falls into disrepute.

6. The personnel of the Jury should be made known in the program. Only with such knowledge is the competitor able to decide intelligently whether or not he should enter. A designer of the modern school would save his labor if the Jury was made up from the academic or conservative group. Did not the B.A.I.D. decide some years ago to have two juries—one for the "modern" and one for the "academic"?

   Of course, if we class ourselves with the boxing fraternity, where the referee is announced at the ringside to avoid fixing and murder—then we have little to sustain our plea for an announcement of the Jury in the program. By keeping the identity of the Jury secret, it appears we either do not trust their integrity, or fear the competitors will be unduly influenced—a reflection on both—is it not?

   Tendencies in architectural design today are reflected in two antagonistic camps, and so knowledge of the jury should be one of the determining factors in the choice of entering a competition.

   Most of the designs in the Oregon competition were in the modern manner. As one of the Jury remarked—"It looked as though we were in Russia." For these designers, no matter how sound their "parti" —the mask or outward expression precluded their winning with such a lay jury—fine and upright as it was.

7. All designs should be shown to the public and the competitors given a full report by the Jury. The refusal to show the Oregon designs in public exhibition, or in the press, left a very bad impression which could easily have been avoided.

ELLIS F. LAWRENCE, Dean,
School of Architecture, University of Oregon.

Wide World Photo

Sir Raymond Unwin

UNWIN AT COLUMBIA

Filling the vacancy left in the Town Planning Studio by the death of Henry Wright, Sir Raymond Unwin last month began a half-year term of lectures. Sir Raymond, dean of English town-planners and coiner of the phrase, "No need for over-crowding," is well known in this country, which he toured in 1934 while making a survey of American housing.

LEO FRIEDLANDER TO N. Y. U.

Well known for past performance is sculptor Leo Friedlander, new head of the Department of Sculpture at New York University's School of Architecture and Allied Arts. Mr. Friedlander, believes "that, with our present-day new order of things in architecture, we are sadly in need of ways and means for decorating our new buildings." Rigid, isolated or academic methods will be avoided in the new classes, which began last month.

NEW PARTNERSHIP

Architect & Building News

Walter Gropius **E. M. Fry**

Recently announced was a new partnership between Professor Walter Gropius, famous head of the now extinct "Bauhaus" in Germany, and the young English architect E. Maxwell Fry. Now in self-imposed exile from Nazi Germany, Prof. Gropius has done several jobs in Europe and the Soviet Union: he is now living in England. Mr. Fry is an active English architect.

CALENDAR OF EXHIBITIONS AND EVENTS

- **October 1**—Opening, New York University lecture courses; Metropolitan Museum of Art, Morgan Library, Frick Art Library, New York City
- **October 1–2**—Sixth Annual Meeting of Porcelain Enamel Institute, Hotel Statler, Cleveland, Ohio
- **October 9**—Closing date, New York World's Fair architectural competition, New York City
- **October 19–23**—Eighteenth Annual Convention, American Society for Metals; Seventeenth Annual Meeting, American Welding Society, Cleveland, Ohio
- **October 21–23**—Fourteenth Annual Convention, American Institute of Steel Construction, White Sulphur Springs, W. Va.
- **November 18–20**—Thirty-seventh Annual Convention, International Acetylene Association, St. Louis, Mo.
- **November 30 – December 4** — American Society of Mechanical Engineers Annual Meeting, New York City
- **November 30 – December 5** — Twelfth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City

Wide World Photo

CITY PLANNING WHERE MEN ARE MEN

When 200 families from the Middle West last year invaded this quiet Alaskan valley, they found a wilderness. Today they are well on their way towards a self-sustaining community, with "the sturdier and more aggressive type" already off the relief rolls. The photograph, by Father Hubbard, the Alaskan explorer, shows a tent village at Palmer Center.

ROTUNDA TOO SMALL FOR VIRGINIA TOMES

When he died in 1826, Thomas Jefferson left behind him a partially completed University of Virginia. His largest architectural commission was centered by the rotunda-topped library. Some years ago the structure burned and was rebuilt. The new library, which conforms to Mr. Jefferson's enthusiasm for Palladio, will supplement it.

Photo Finsler

APARTMENT HOUSE LOBBY

ALFRED AND EMIL ROTH,
MARCEL BREUER,
ARCHITECTS

(See pages 287–294)

WESTACRES

A PRACTICAL DEMONSTRATION OF PRODUCING HOUSES TO SELL UNDER $4,500 (ONE ACRE OF LAND INCLUDED)

STATEMENT OF FACTS

A development of 150 homes built by Oakland Housing, Inc., nine miles west of Pontiac, from a fund of $850,000 consisting of a gift of $550,000 by Senator James Couzens and a grant of $300,000 by the Federal Emergency Relief Administration. The capital return from the sale of homes to be placed in a revolving fund to expand the present project, or to build similar projects.

Total acreage owned by the Corporation—874 acres
Total acreage in homestead development—295 acres
Total cost of homestead development—$665,916
Total cost per unit—$4,439.44
Construction started September 13, 1935
150 houses closed in December 20, 1935
150 houses ready for occupancy March 15, 1936
Houses occupied by August 1, 1936—100
Average income per family of 100 families—$1,649.04
Average age of heads of family—31
Project Manager and Supervising Architect—Barton P. Jenks, Jr.
Site Plan and Architectural Work—E. G. von Storch and R. O. Cuppy
Construction Engineer—R. C. Perkins
Landscape Architect—E. Genevieve Gillette
Heating Engineer—Newell J. Hill

HOMESTEAD COSTS (Average)

		TOTAL	UNIT	TOTAL
I. HOUSE CONSTRUCTION:				
Material	$298,716.00		$1,991.44	
Labor	177,486.00		1,183.24	
Construction overhead	45,420.00	$521,622.00	302.80	$3,477.48
II. LAND AND IMPROVEMENT:				
Landscape and soil improvement	34,558.50		230.39	
Water mains	21,564.00		143.76	
Roads and streets	22,917.00		152.78	
Land	29,145.00		194.30	
Septic tanks and drains	12,160.50	120,345.00	81.07	802.30
III. OVERHEAD APPLICABLE TO ITEMS I AND II:				
Engineering and architectural services	5,620.50		37.47	
Original survey	3,006.00		20.04	
General administrative expense	15,322.50	23,949.00	102.15	159.66
TOTAL COST		**$665,916.00**		**$4,439.44**

Photographs by F. S. Lincoln

CONSTRUCTION OVERHEAD

	SALARIES AND WAGES	OTHER	TOTAL
Engineering	$7,001.76	$1,415.01	$8,416.77
General clean-up	1,383.63	456.81	1,840.44
Material handling	7,218.49	2,403.66	9,622.15
Original survey		1,447.47	1,447.47
Clerical	1,911.53		1,911.53
General expense	582.83	6,945.35	7,528.18
Temporary heat	4,022.30	7,988.34	12,010.64
Insurance		1,719.29	1,719.29
Maintenance	480.10	443.43	923.53
TOTAL	$22,600.64	$22,819.36	$45,420.00

AIMS AND OBJECTS

When Senator James Couzens and the Federal Emergency Relief Administration made their contributions to the Oakland Housing, Inc., their gifts were made with the purpose of finding out whether it was possible for a nonprofit organization to build homes that could be bought and paid for by the average industrial worker and, also, whether such a nonprofit organization by various means could spread the purchasing power of the *average wage* so as to bridge the gap between the inadequate standard of living that the average wage now affords, and an adequate standard of living.

METHOD OF ACCOMPLISHMENT

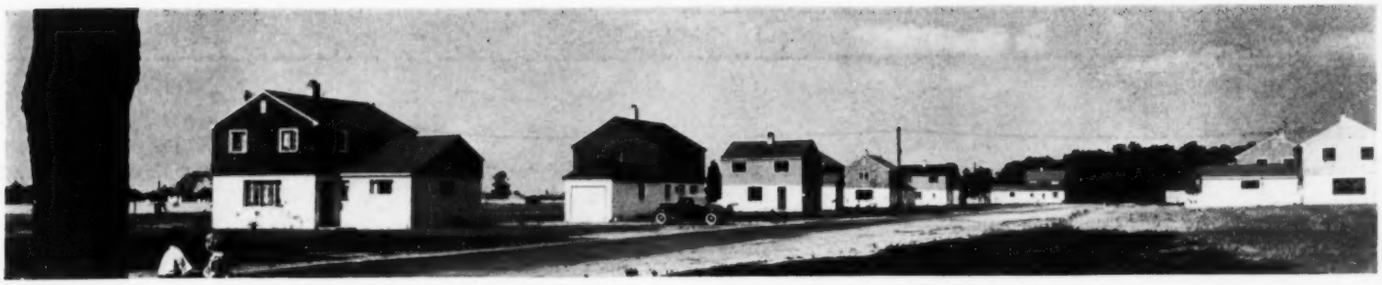
So far Oakland Housing, Inc., has attained its first objective of providing homes within the means of the average industrial worker. It has partially attained its second objective by providing gardens which can be used to supplement an inadequate income due to seasonal unemployment or actual low wages. It has accomplished these results by two major methods; *first*, by carefully determining in advance the monthly amount the average industrial worker can pay for shelter without endangering his other budgetary needs, *then*, by capitalizing this monthly amount on the basis of a long-term contract at a low rate of interest, thus fixing the maximum debt that the worker can incur for his home.

To determine the monthly amount the average industrial worker could pay for shelter it was necessary to know his wage. Investigation of the wages paid in the three big plants of Pontiac which employ approximately 80% of the labor disclosed that the average wage for the years 1934-1935 was $1,200 for one plant and $1,600 for the other two. Incidentally, it might be said here that the 1936 figures are slightly higher for all three plants.

Knowing the average wage it was then possible to make budgetary studies, thus determining the monthly amount of the workers' income that could be allotted for shelter. In making these studies the $1,200 figure was used to which $100 was added representing the amount that the garden might provide in the way of food that would otherwise represent a cash outlay. Studies were made not on the basis of a relief budget but on the basis of $1,300 for the statistical family of four. Prices used were those established by the Good Housekeeping Association of Detroit, for the spring of 1935. These figures were corrected to conform to local conditions in Pontiac, and detailed figures were established for food, clothing, medical care, etc., a summary of which will be found later in this article.

When all the budgetary needs of the family were established with the exception of the cost of shelter, it was found that a small residue was left over. This residue represented what the family could pay for shelter. By capitalizing this residue according to the previously decided long-term contract of 30 years and at a 3% interest rate, a further figure was established representing the maximum indebtedness that the family could incur for a home without endangering other budgetary needs.

The actual monthly figure that the budget studies revealed could be spent for shelter was $19.42. Simple calculations demonstrated that such a monthly payment would amortize a capital investment of $4,600 at 3% within 30 years. Therefore, it was clear that were Oakland Housing, Inc., to build



homes that the average industrial worker could pay for, the total cost of such a home could not exceed $4,600. Further, if the budgetary studies were correct, there was no special reason for the Corporation to attempt to reduce unreasonably the total sum that could be spent on the home.

Realizing that the maximum sum of $4,600 was all that could be spent on a home unless the Corporation were to resort to subsidy, it became incumbent upon the architects and engineers to bend every effort if they were to provide modern suitable homes within this figure. It was clearly evident from the start that all the work had to be budgeted—so much for the house proper, and so much for land, utilities, and landscaping. Once having established the budget system, it became a matter of give and take between the different items since the total could not exceed a fixed sum. The fixed sum was set considerably lower than $4,600 to allow for desired extras and unexpected contingencies.

The question of roads and water mains was a fairly easy one to solve from the point of view of cost, since it resolved itself into a problem of the shortest lineal feet of both services that would meet the requirements of the site plan. Repeated studies were made until the roads and mains were reduced to about three and one half miles in length. Greater reduction could not be made without seriously weakening the site plan. Having arrived at this point it was a fairly easy matter to set up a budget that would allow for suitable roads and water mains.

The landscaping was somewhat of a different question since it involved what might be termed a purely aesthetic problem. That landscaping was necessary was not in question, but there was the question of how much and where. Finally, a budget was established which allowed for landscaping of individual lots, streets, and recreational areas.

Having established budgets for the utilities, landscaping, and the land already bought at approximately $100 an acre, simple arithmetic showed how much could be spent on the houses. The problem of the house then became that of producing the most house for a given sum of money or, to put it another way, to constantly reduce the cubic foot volume of the structure, and at the same time increase utilizable space; to do away with unnecessary surface trim or eye appeal, yet provide a house economical of operation and maintenance; last but not least, to provide a house that would withstand the wear and tear of 30 years' time. Whether the result has been obtained in its entirety remains to be seen, but the attempt has been made.

What has been written about the budget system of building may seem simple theory, but impossible in execution. To some extent this is true, and there has had to be constant give and take between the various budget items. For instance, some 30′-0″ finished roads were reduced to 20′-0″ to allow the difference in cost to be used elsewhere. Finally, as stated above, original budgets were set somewhat lower than the actual amount that could be spent, to allow for desirable extras or unforeseen contingencies, and by constantly referring to the original budgets it became immediately evident whether any given extras were permissible or not. Since the "proof of the pudding is in the eating," it may now be said that Oakland Housing, Inc., has been able to provide homes that cost $4,400 and, because of the terms of purchase, may be bought and paid for by the average industrial worker without benefit of subsidy.

COMMENTS ON LONG-TERM CONTRACTS

It hardly seems necessary to state why the long-term contract at low rate of interest has been used by Oakland Housing, Inc., since it has long been known that of all the factors that make home ownership prohibitive for the low-income worker, high interest rates are the most important. Coupled with high interest rates the short-term mortgage or contract makes for monthly payments not in keeping with the average worker's income.

ANNUAL FAMILY BUDGETS

Size Family:—	2	3	4	5
Food	$210.00	$306.00	$396.00	$480.00
Clothing	98.70	116.02	133.41	181.92
Fuel and light	133.50	133.50	133.50	133.50
Furniture replacements	34.00	36.00	38.00	40.00
Transportation	60.00	60.00	60.00	60.00
Medical care	30.00	35.00	40.00	50.00
School expense	....	2.50	4.75	6.50
Cleaning supplies	11.66	13.32	14.98	16.64
Personal care	11.00	16.00	21.00	26.00
Miscellaneous	54.40	58.90	63.40	67.90
Home obligations	310.80	310.80	310.80	310.80
Life insurance, Recreation, Education, Sundry	200.00	225.00	250.00	275.00
Total Annual Budget (30-year basis)	**1,154.06**	**1,313.04**	**1,465.84**	**1,648.26**
Savings from food produced and bulk purchases	125.00	139.00	153.00	165.00
Net minimum requirements	1,029.06	1,174.04	1,312.84	1,483.26
Net minimum requirements (20-year basis)	**1,099.26**	**1,243.34**	**1,383.04**	**1,553.46**

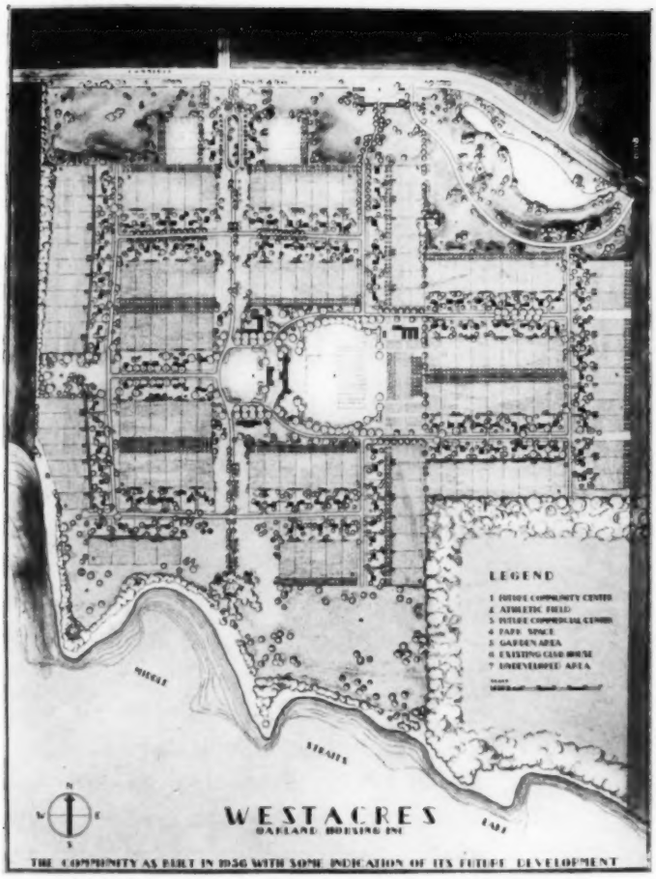
HOME OBLIGATIONS

	30 years	20 years
Payment on home	$222.84	$293.04
Fire insurance	9.00	9.00
Taxes	36.96	36.96
Water	12.00	12.00
Maintenance	30.00	30.00
	$310.80	**$381.00**
PER MONTH	**25.90**	**31.75**

SURPLUS AFTER DEDUCTING ANNUAL REQUIREMENTS AT VARIOUS INCOMES

Size Family:—	2	3	4	5
			30-YEAR BASIS	
ANNUAL INCOME		Surplus		Surplus
$1,100.00	$ 70.94	$	$	$ ....
1,200.00	170.94	25.96	....	....
1,300.00	270.94	125.96	....	....
1,400.00	370.94	225.96	87.16	....
1,500.00	470.94	325.96	187.16	16.74
1,600.00	570.94	425.96	287.16	116.74
1,700.00	670.94	525.96	387.16	216.74
			20-YEAR BASIS	
1,100.00	.74	....	....	....
1,200.00	100.74	....	....	....
1,300.00	200.74	56.66	....	....
1,400.00	300.74	156.66	16.96	....
1,500.00	400.74	256.66	116.96	....
1,600.00	500.74	356.66	216.96	46.54
1,700.00	600.74	456.66	316.96	146.54

NOTE:—Figures for Budget and Surplus are used as a *guide only* in the selection of families. They are not absolute; much depends on past performance of families in budgeting their income.



Each family is provided with enough land to enable it to raise fruits, vegetables and poultry for its own consumption. There is also provision for recreation area, a school, community building and stores.

SITE PLAN

The site is a level tract of land about nine miles west of Pontiac in an area dotted with small lakes which are widely used as recreational areas by the people of Detroit. It is limited on the north by a main highway and on the south by some woodland and Middle Straits Lake. The property includes some 55 acres of woodland, 6,000 feet of lake frontage, and 65 acres of the lake itself. On the northeast corner of the property is an old clubhouse which was built as part of a subdivision scheme and at present is used as a corporation office and meeting place for residents of the community. The lagoon in front of it connects beneath Commerce Road with Green Lake which is privately owned.

The subdivision of the land and its final organization into the site plan as reproduced was governed by a consideration of several factors which have made the problem both unusual and interesting. The plan shown, which is exactly as built, has been developed directly from the demands of the problem, rather than a restatement of a particular theory.

There were certain things to be done. Each family was to be provided with enough land to enable it to raise fruits, vegetables and poultry for its own consumption; the land must be divided into equal units since residents were to be selected from one definite income class and the costs of development were to be equally divided; there must be provision for recreational area and the future development of a community center which might include a community building, a school, work centers, or any one of a list which could be developed to greater length; a shopping center would probably develop as a separate unit since it would be supported by residents of adjacent areas; there must be provision for future expansion since the 150 houses built as an initial operation did not represent the capacity of the land; landscape features such as the lake, woodland, and an existing avenue of trees must be kept the property of the whole community.

A highly centralized community with outlying tracts of land which could be worked as allotment gardens at first seemed the most economical solution, but a preponderance of sentiment in this area for a personally owned home and land caused the final subdivision to be into plots of approximately one acre. These plots became units averaging one hundred by four hundred feet; for economy of streets and utilities they are grouped so that the garden areas become simple rectangular shapes which permit full use of mechanical working of the soil and its use in a cooperative fashion if such a desire might develop among small groups of residents. Fruit trees have been used to establish rear lot lines and to relieve the openness of the plan.

An existing avenue of poplars reaching from highway to lake was developed as an axis of the plan and its meeting with the area for community buildings and recreation, which is centered geographically, resulted in the development of a counter axis. This rigid geometrical development of streets and open areas is in a very real harmony with the flat plane of the land and the highways and blocks of woodland which divide it.

Some of the land adjacent to the highway could only have been developed at considerable cost and was instead used as a protection from traffic. The clubhouse and land surrounding it have been kept apart from the general scheme in order that any desire for commercial development would not be at the expense of the privacy of the community.

ARCHITECTURE

In regard to the architecture of the houses, there was no attempt to define a "style" which would be the result of a personal predilection toward details and forms. There were definite matters to be solved: the houses must have a real utility value to be of any significance to low-income families; they must be of materials and a construction which would be durable and of lowest cost; the technique of construction must be one which would allow full use of available labor and speed in construction. The style of the finished product must be considered as resulting from the manner in which the above points were solved together with the influence of the use of the land.

DESIGN OF HOUSES

The houses resolved themselves into very simple units and the factors which governed their plan and design were the result of a very careful analysis of the problem to be met and, once stated, were rigidly followed.

1. The length of the contracts for purchase make a house of at least three bedrooms necessary in order to provide for children of both sexes and possibly, at a later date, aged parents.
2. The locating of the community at a distance of several miles from occupational centers requires the inclusion of a garage with each house.
3. Dining rooms as separate units can be eliminated if table space for five is included in the kitchen area.
4. Space for the heating unit and laundry equipment is most conveniently located on the ground floor. Consequently basements can be eliminated and advantage taken of resulting economies.
5. The above requirements can be most economically built into a two-story house of simple shape which is developed from a nearly square floor plan. The garage is most convenient when attached and it can also become a design unit to give variation to the house mass.
6. Room sizes should not be such as to produce a minimal house but should be as small as will provide for best physiological and psychological development of a family of from four to six people. The purpose is to provide workingmen homes which would recognize the standards of good architectural practice in the plan of each part.

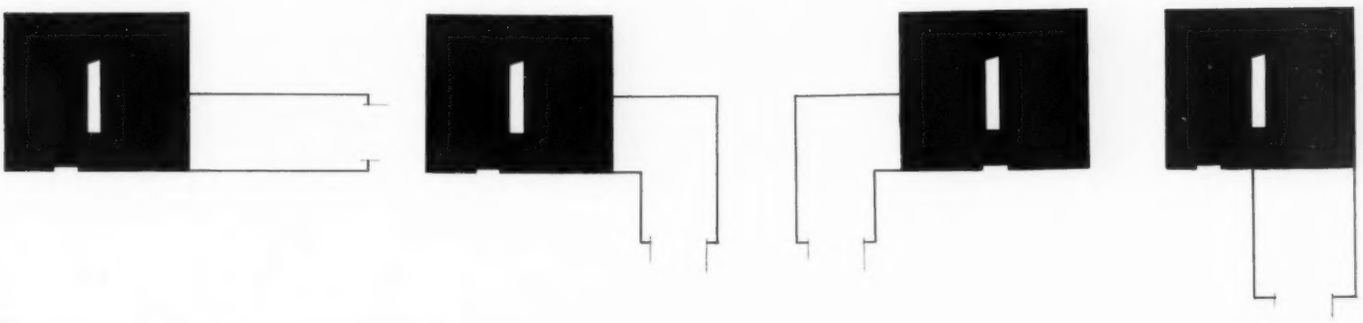
Utility room with heater and laundry is on ground level. The cement floor is supported on steel bar joists.

Three house plans were finally developed which have some individuality in details but which are essentially similar in organization, since each must satisfy the same requirements with no decided differences in cost. Each of these three plans was given four variations by changes in the relation of the garage to the house proper and re-design of the fenestration. These variations had practically no effect on structural methods and materials and consequently did not defeat the possibilities of savings due to standardization. So the houses were located on their respective lots, and were oriented so that each living room would have one southern exposure and at least one exposure to either east or west.

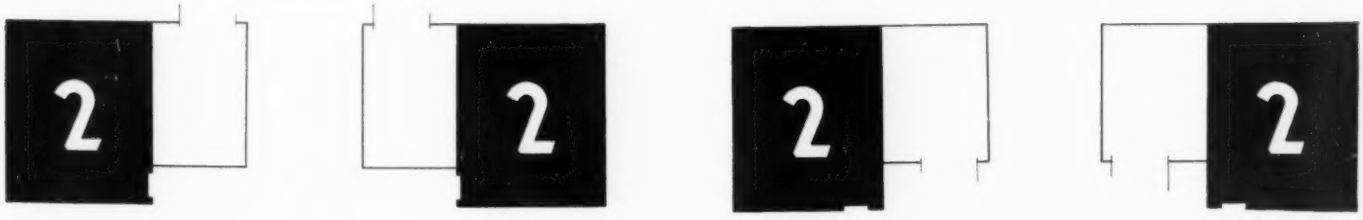
The design principle evolved for the exterior is simple; concrete block for the first-story walls in all homes and a second story of wide siding, shingle, or vertical boards and battens on wood frame. This constant line of division between masonry and wood materials provides a horizontality which unifies what otherwise would be wholly separate small, cubical units. The finish color of these materials filled the role of ornament, and a color design for the whole project was developed which kept the masonry walls closely related in color in order to further their use as a unifying material, while the wood was treated with paint and stains in colors specially made for this project. Sidewalls, trim, sash, and doors became parts of a related design which was linked to the street designs.

Photographs by F. S. Lincoln

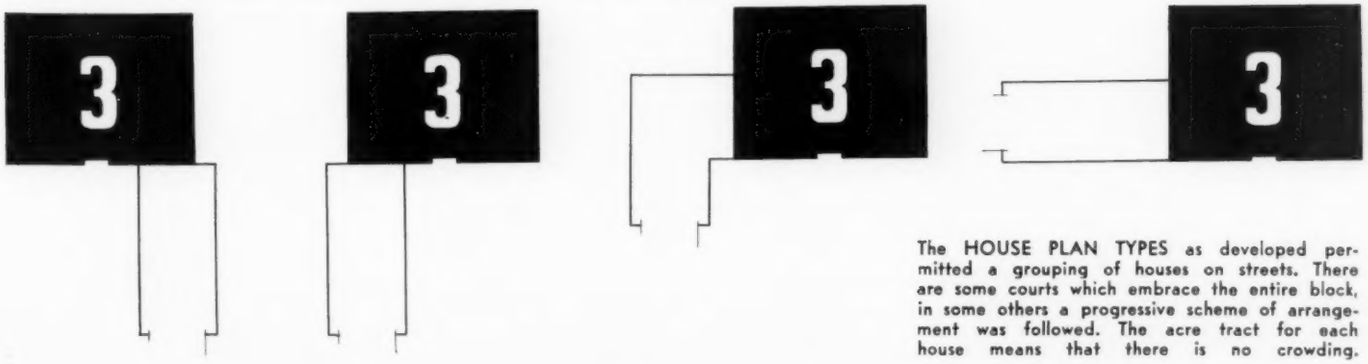
PLAN NUMBER 1 with four garage variants. House plans under each number are identical.



PLAN NUMBER 2. A more compact plan, having storage space between house and garage.



PLAN NUMBER 3. The garage changes are due to nature of lot, whether corner or in between.



The HOUSE PLAN TYPES as developed permitted a grouping of houses on streets. There are some courts which embrace the entire block, in some others a progressive scheme of arrangement was followed. The acre tract for each house means that there is no crowding.

CONSTRUCTION AND COSTS

The following outline specifications and cost data are given with brief comment.

Contracts for labor and material were made for heating, plumbing, and electrical work. For the general construction the Corporation purchased and distributed materials and contracted for labor. Two builders, each being awarded seventy-five houses, conducted the general construction operation, one contract being for a fixed sum while the other was on a cost-plus basis. All contractors were required to pay wages at least equal to prevailing wages in the locality, on the following scale:

MASONS	$1.00 per hour	PLASTERERS	$1.00 per hour
CARPENTERS	.80 per hour	ELECTRICIANS	1.00 per hour
PAINTERS	.80 per hour	PLUMBERS	1.25 per hour
COMMON LABOR	$0.45 per hour		

The detailed labor costs given below are of those houses built on a cost-plus basis since complete payroll figures are available on this work. The houses in the table of labor costs are numbered in the order of construction so that they might be studied for savings. The last twenty were closed in during late November and December so were somewhat affected by cold and stormy weather. Plastering was done between November 15 and March 1. Some allowance should be made on the costs of the first houses for the fact that mechanics in this vicinity had not been steadily employed at their trades for several years and some breaking-in was necessary.

SPECIFICATION OUTLINE

FOUNDATIONS: Reinforced concrete and concrete blocks.

STRUCTURE: Exterior walls; first story of concrete block, furred and plastered on inside; wood frame above, sheathed, covered with building paper and finished with wide siding, shingle, or vertical boards and batten. Insulating lath on interior and on second-floor ceiling. All ceilings plastered. Interior partitions wood frame, plaster board and plaster.

ROOF: Wood frame and asphalt shingles.

CHIMNEY: Brick, terra cotta flue lining.

WINDOWS: Steel casements, housing type, with steel interior casings.

FLOORS: Utility room concrete on steel joists; kitchen and bath maple on wood joists; all others oak on wood joists.

WOODWORK: All trim wood to special detail; interior doors two panel; entrance door six-panel wood; other exterior doors two-panel wood, glazed.

PAINTING: Concrete block cold water paint. Shingles dipped in creosote stain. Remaining exterior woodwork stained or lead and oil paint. Kitchen and bathroom walls, utility room walls and interior doors and trim washable paint. Other walls casein paint. Oak floors semi-gloss varnish, maple floors two coats sealer. Metal sash and casings oil paint on special primer.

HEATING: Fan-driven, re-circulating, warm-air system, Fox coal-burning furnace.

PLUMBING: Copper piping; Brigsteel sink, lavatory and tub; "Standard" toilet; concrete laundry tubs.

WIRING: Romex cable, bakelite switches and plugs.

SANITARY: Concrete septic tank with tile field. Terra cotta grease trap with separate tile field.

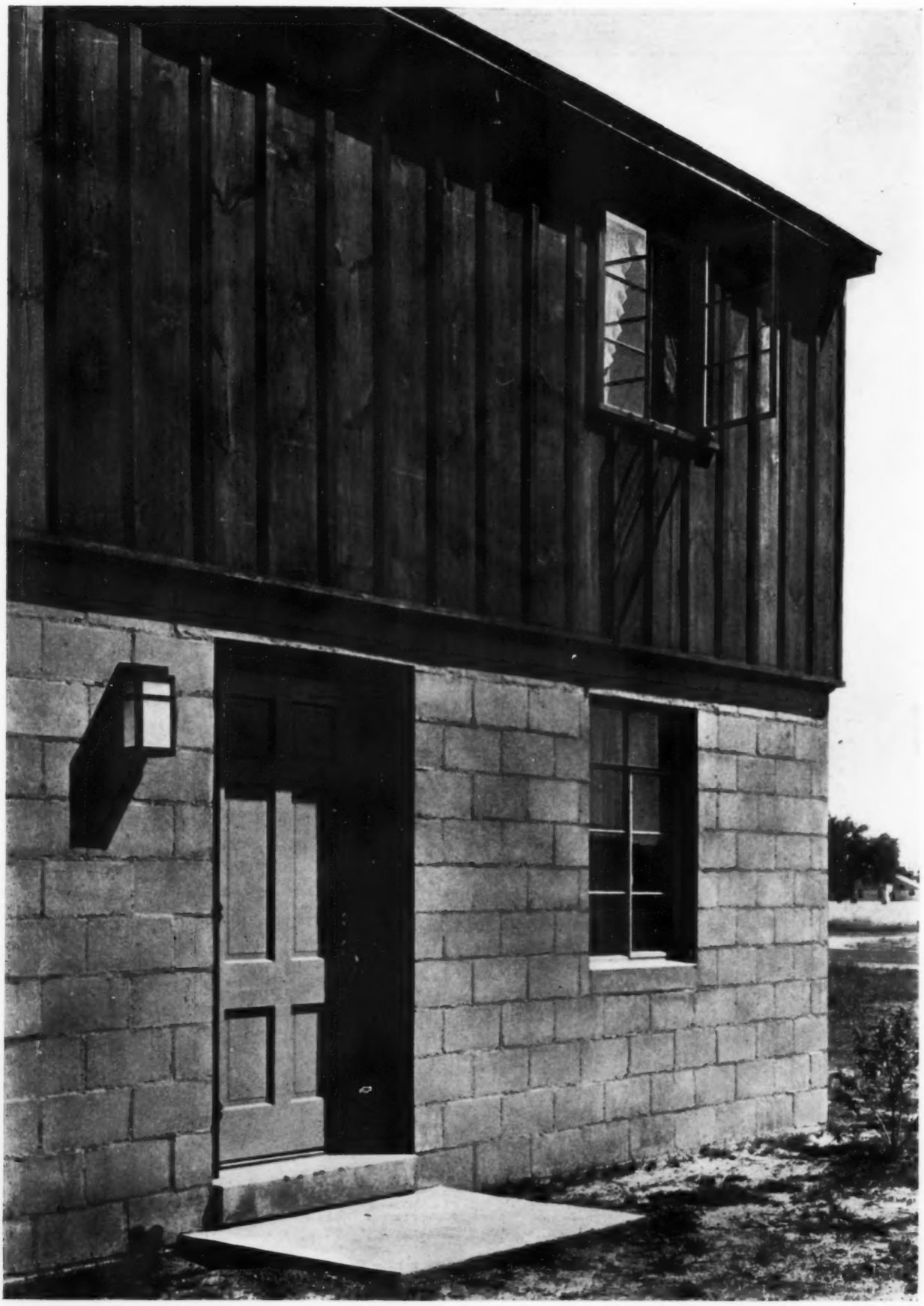
AVERAGE COST OF HOMES

	Material	Labor	Overhead	Total
Gravel	$13.80			
Sand	4.20			
Cement	25.65			
Mortar	20.33			
Blocks	121.15			
Brick	15.65			
Reinforcing steel	4.50			
I-Beam	6.36			
Gabriel joists	32.55			
Termite strip	8.13			
Wire mesh	2.69			
Sills	11.66			
Lintels	33.00			
Steel sash	106.34			
Flue lining	3.93			
Rough lumber	266.65			
Roofing	48.86			
Siding	59.67			
Plastering	140.00			
Building paper	6.53			
Flooring	65.50			
Trim	207.72			
Plumbing	198.00			
Heating	272.00			
Electrical	65.30			
Electrical fixtures	22.97			
House service (water)	67.70			
Glazing	20.50			
Clean-out door	.57			
Chimney caps	.90			
Flashing	3.44			
Nails and screws	19.06			
Finished hardware	30.28			
Anchor bolts	4.20			
Miscellaneous	90.77			
Labor		$1,183.23		
Construction overhead			$302.80	
Waste	9.96			
Grading	13.67			
TOTAL	**$2,024.19**	**1,183.24**	**302.80**	**$3,510.23**
Less Material Returned to Inventory	32.75			32.75
NET TOTAL	**$1,991.44**	**1,183.24**	**302.80**	**3,477.48**

LABOR COSTS OF HOUSES

No.	TYPE	MASONRY	CARPENTRY	PAINTING	PLASTERING	Misc. Including SUPT'S	TOTAL
1	2	$205.75	$491.75	$252.30	$172.16	$101.89	$1,223.85
2	1	192.98	528.51	266.07	154.73	104.68	1,246.97
3	2	178.89	512.49	249.80	156.63	100.19	1,198.00
4	3	252.92	493.13	225.89	141.14	105.00	1,218.08
5	3	197.12	536.56	227.25	146.79	105.60	1,213.32
6	1	211.74	470.13	232.92	138.78	102.93	1,156.50
7	3	211.20	531.58	227.05	143.86	106.04	1,219.73
8	2	220.02	455.03	213.90	160.97	103.47	1,153.39
9	1	210.83	452.43	205.69	154.40	102.75	1,126.10
10	3	198.19	473.38	204.90	161.20	104.89	1,142.56
11	2	188.61	500.98	215.88	156.44	104.95	1,166.86
12	3	195.64	551.32	211.86	146.66	106.97	1,212.45
13	2	162.60	494.76	219.85	164.43	100.10	1,141.74
14	1	204.59	460.81	245.99	160.51	103.53	1,175.43
15	3	183.72	473.43	197.88	153.20	100.35	1,108.58
16	3	180.08	469.91	190.43	133.60	100.72	1,074.74
17	1	158.42	473.08	235.32	160.81	98.83	1,126.46
18	1	210.36	507.83	195.39	162.98	103.64	1,180.20
19	3	177.71	468.83	200.60	150.98	98.70	1,096.82
20	3	183.15	501.13	231.64	154.24	105.77	1,175.93
21	2	170.29	410.03	185.55	163.28	93.77	1,022.92
22	1	178.66	429.53	244.25	161.63	99.28	1,113.35
23	2	159.33	484.08	189.63	156.55	97.63	1,087.22
24	2	159.58	435.98	220.03	166.17	97.87	1,079.63
25	1	183.70	509.33	185.43	178.25	100.24	1,156.95
26	2	166.75	473.08	214.05	180.17	102.31	1,136.36
27	3	171.17	545.63	185.04	149.78	100.86	1,152.48
28	1	197.33	568.88	197.99	159.53	104.75	1,228.48
29	3	202.03	461.90	210.85	176.76	99.63	1,151.17
30	1	165.25	436.63	238.90	150.74	93.88	1,085.40
31	3	200.39	434.23	176.95	161.18	91.50	1,064.25
32	1	192.31	434.03	200.42	148.49	91.56	1,066.81
33	2	179.89	423.68	191.43	171.21	93.84	1,060.05
34	1	207.70	462.08	194.29	180.32	100.73	1,145.12
35	3	205.08	472.81	195.32	138.17	97.44	1,108.82
36	2	196.40	415.83	200.52	175.31	96.67	1,084.73
37	1	209.19	493.25	183.52	171.55	99.27	1,156.78
38	1	188.89	434.45	214.39	165.80	89.73	1,093.26
39	3	192.88	487.73	179.76	156.26	97.75	1,114.38
40	1	186.76	470.30	182.73	163.97	87.41	1,091.17
41	2	177.49	377.18	195.21	183.95	91.49	1,025.32
42	3	170.98	398.95	187.20	181.65	87.33	1,026.11
43	3	202.35	399.13	201.64	167.24	90.55	1,060.91
44	2	178.95	483.45	188.30	168.98	92.06	1,111.74
45	2	170.45	451.08	202.07	164.00	92.49	1,080.09
46	3	178.25	445.29	192.77	194.16	89.41	1,099.88
47	2	191.35	376.24	185.87	199.86	89.81	1,043.13
48	1	190.79	428.05	195.50	155.10	88.08	1,057.52
49	1	199.41	402.55	179.55	172.71	90.34	1,044.56
50	3	198.84	493.90	201.27	147.58	93.26	1,134.85
51	3	227.96	471.48	179.07	148.21	97.69	1,124.41
52	1	198.02	472.90	169.05	153.76	93.87	1,087.60
53	3	164.79	510.82	175.98	168.54	98.83	1,118.96
54	3	235.14	461.35	171.03	160.59	97.59	1,125.70
55	1	201.78	426.72	206.57	156.01	95.43	1,086.51
56	1	161.76	454.71	192.25	157.47	88.55	1,054.74
57	2	177.99	397.96	198.44	157.82	91.71	1,023.92
58	1	200.21	458 40	184.60	178.98	90.05	1,112.24
59	2	190.96	434.34	182.93	156.11	92.46	1,056.80
60	3	199.30	421.60	178.59	156.79	86.55	1,042.83
61	2	181.31	483.43	202.62	180.36	99.28	1,147.00
62	2	190.30	464.18	199.21	175.88	95.06	1,124.63
63	2	197.84	451.97	191.95	166.91	99.52	1,108.19
64	1	183.17	476.47	200.32	191.53	104.74	1,156.23
65	3	198.13	430.82	166.55	148.64	94.83	1,038.97
66	1	232.80	470.40	194.14	165.28	103.70	1,166.32
67	2	175.47	454.37	186.97	162.23	92.49	1,071.53
68	2	156.47	464.11	188.49	163.78	100.54	1,073.39
69	2	209.10	402.87	181.59	171.25	86.21	1,051.02
70	3	202.57	464.13	175.65	162.62	91.05	1,096.02
71	2	189.71	429.08	191.75	180.46	90.21	1,081.21
72	2	210.18	439.64	200.20	179.66	92.75	1,122.43
73	1	207.40	529.09	179.38	192.11	99.03	1,207.01
74	1	188.78	468.44	165.50	178.26	90.52	1,091.50
75	3	215.04	534.82	176.25	169.83	99.59	1,195.53

Last 20 houses are those most affected by winter weather before being closed in. . . . Wide variation in figures for painting is due principally to the fact that shingles used as siding were pre-dipped in creosote stain.



WESTACRES • A HOUSING DEVELOPMENT NEAR PONTIAC MICHIGAN

Photographs by F. S. Lincoln

Photographs by F. S. Lincoln

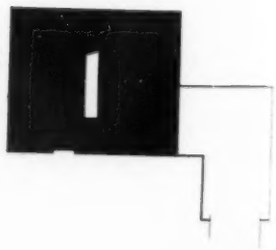
WESTACRES • A HOUSING DEVELOPMENT NEAR PONTIAC MICHIGAN

Photographs by F. S. Lincoln

7480 HONEYSUCKLE ROAD

PROJECT MANAGER AND
SUPERVISING ARCHITECT—
BARTON P. JENKS, JR.

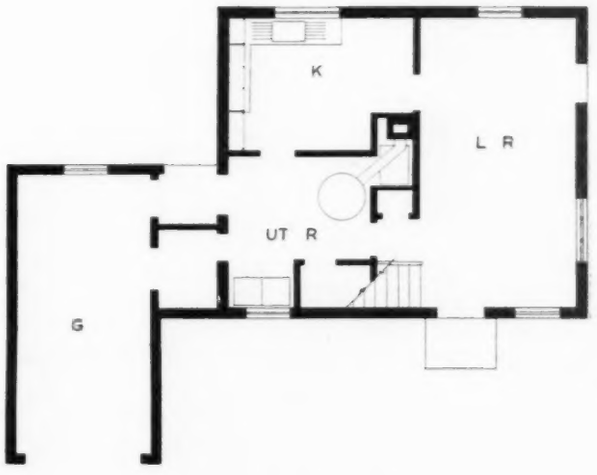
HOUSE
PLAN



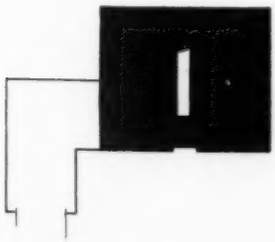
7524 LILAC COURT

ARCHITECTURAL WORK by

EARL G. VON STORCH



HOUSE PLAN

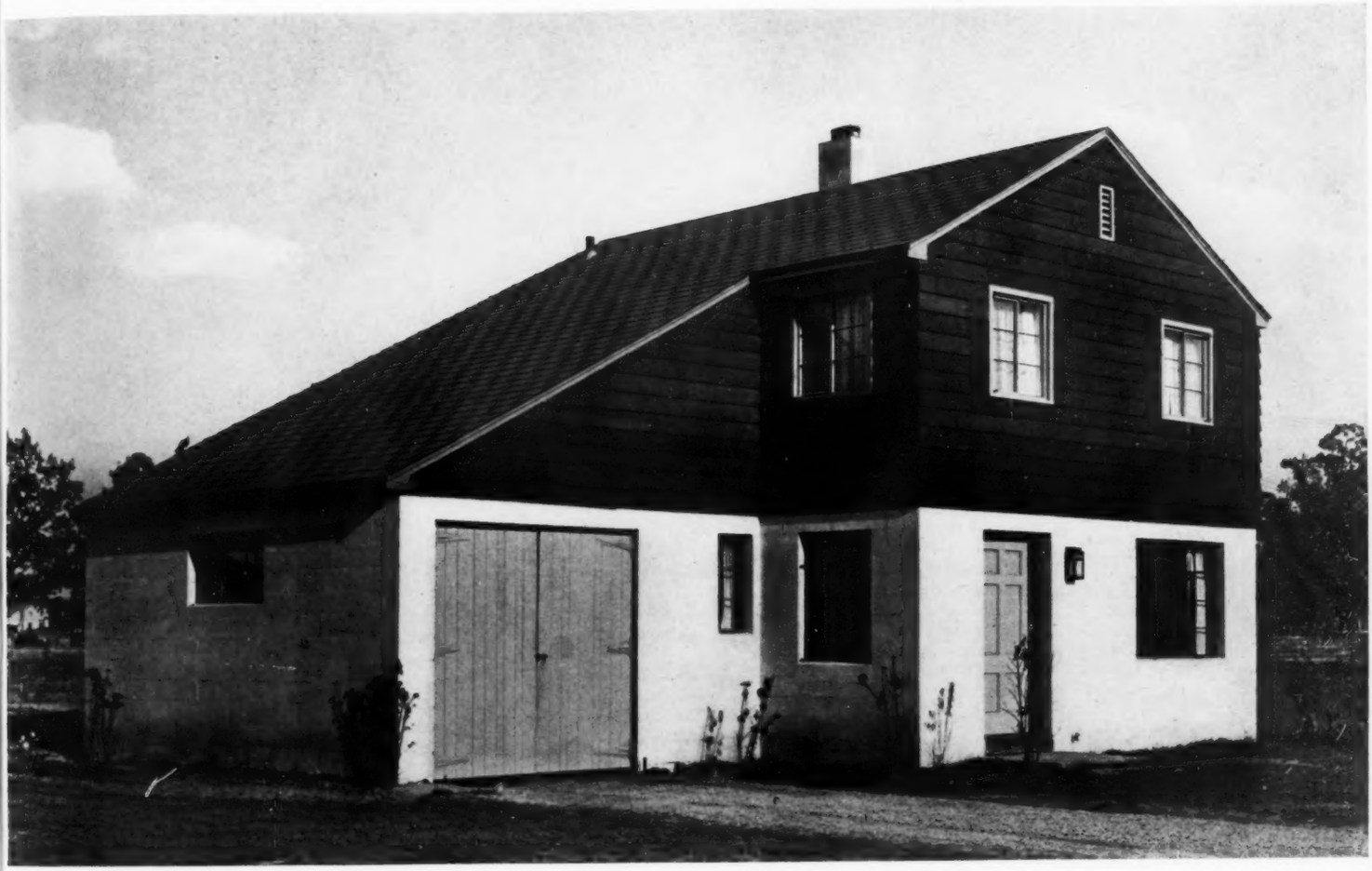


Photographs by F. S. Lincoln

3116 POPLAR COURT

PROJECT MANAGER AND SUPERVISING ARCHITECT—
BARTON P. JENKS, JR.

HOUSE PLAN

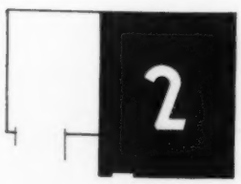


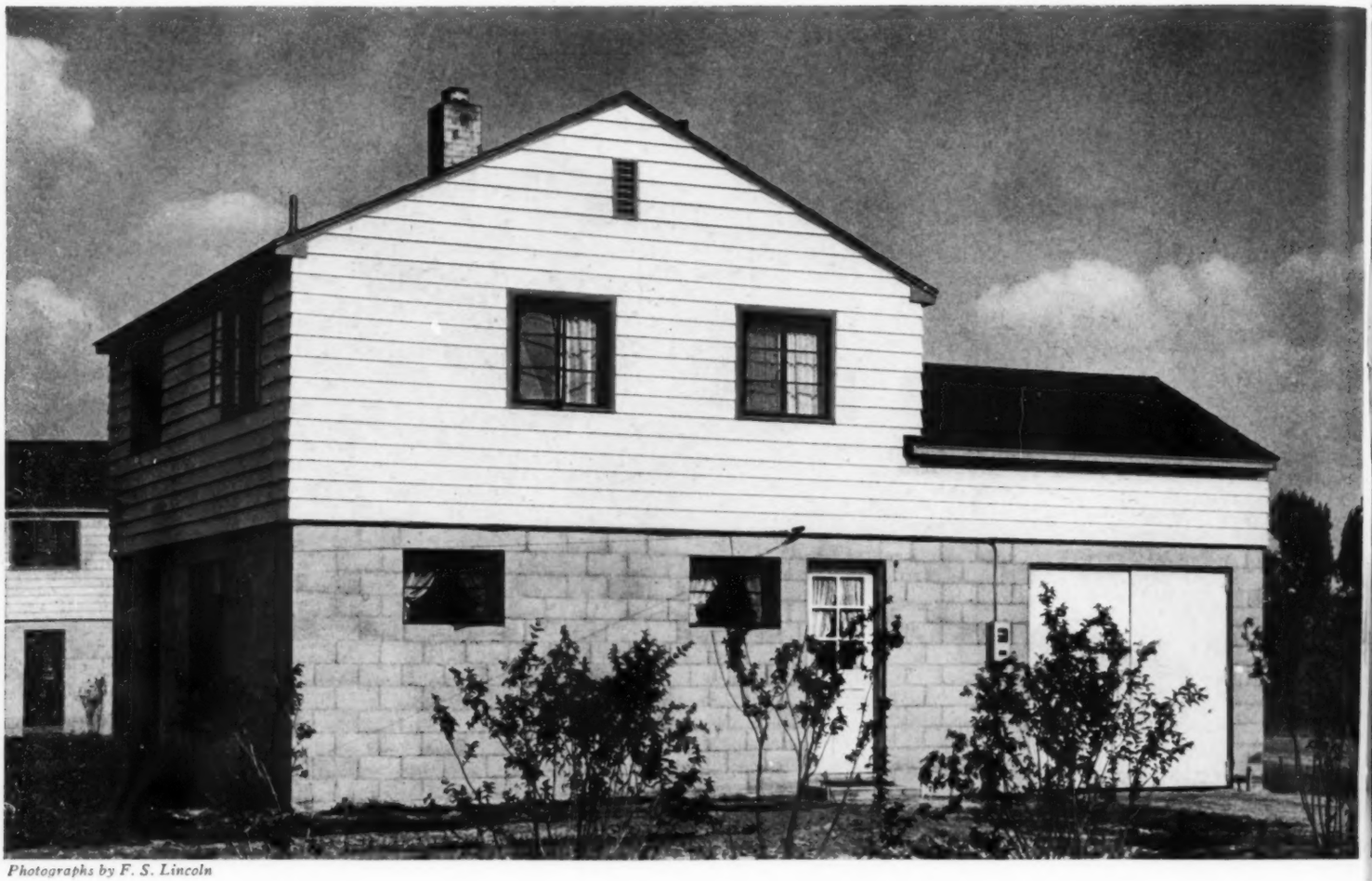
3153 ELDER ROAD NORTH

ARCHITECTURAL WORK by

EARL G. VON STORCH

HOUSE
PLAN

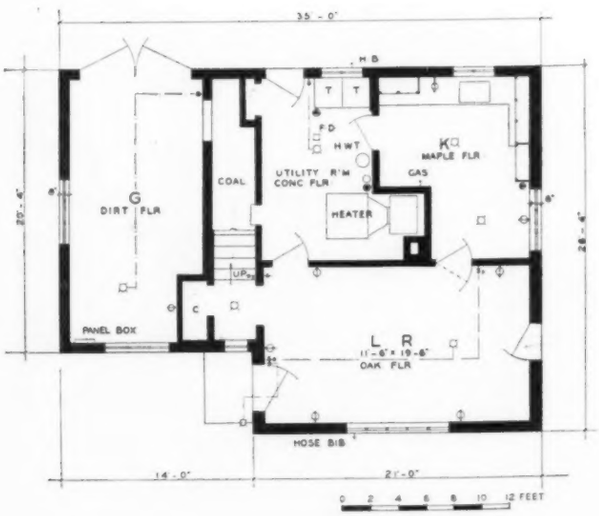




Photographs by F. S. Lincoln

7624 LILAC COURT

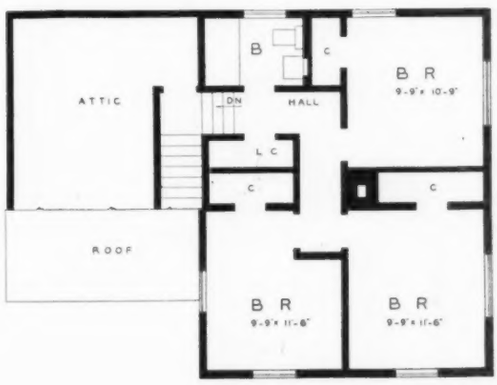
PROJECT MANAGER AND SUPERVISING ARCHITECT—
BARTON P. JENKS, JR.



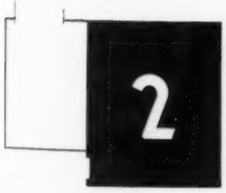
7701 SWEETBRIAR ROAD

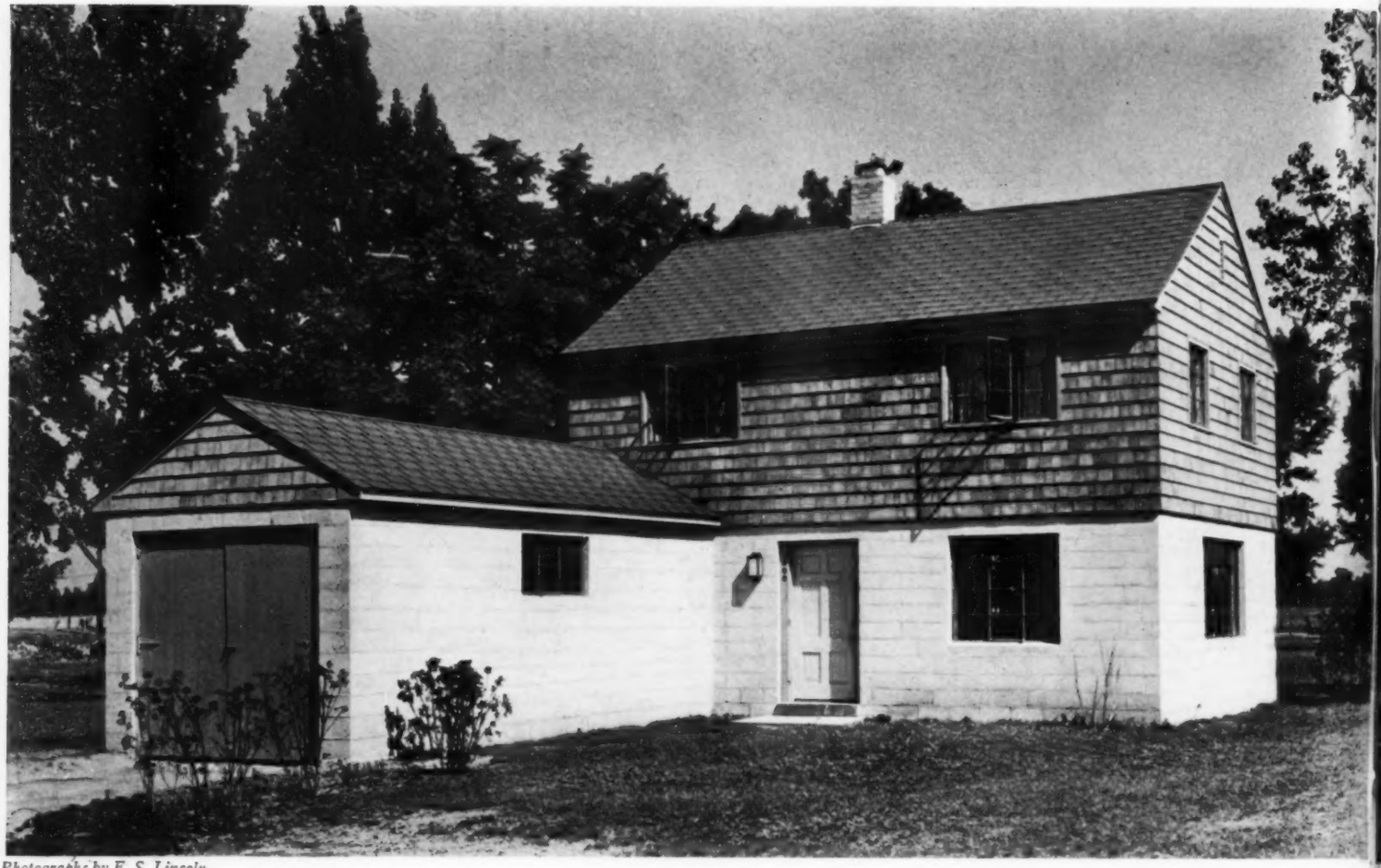
ARCHITECTURAL WORK by

EARL G. VON STORCH

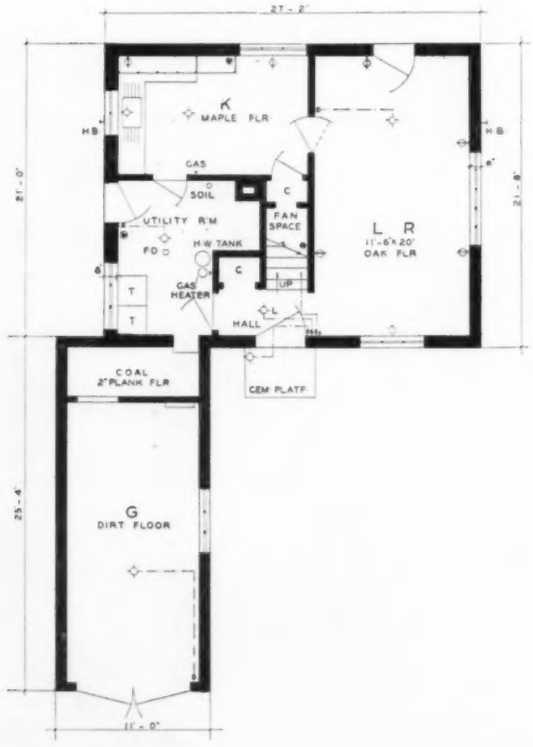


HOUSE PLAN





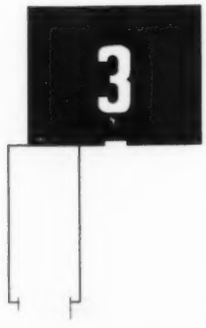
Photographs by F. S. Lincoln

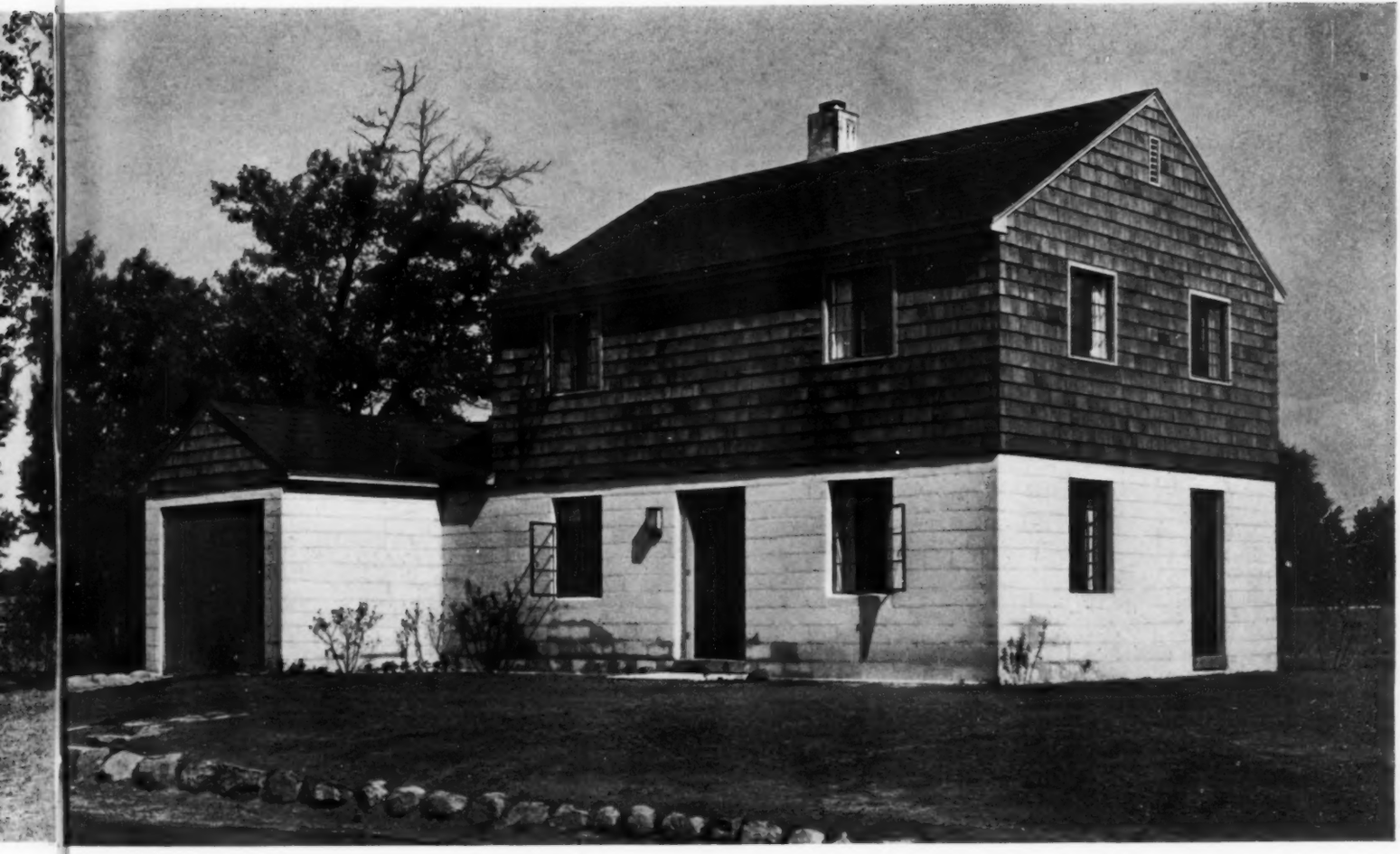


3096 POPLAR DRIVE

PROJECT MANAGER AND SUPERVISING ARCHITECT—
BARTON P. JENKS, JR.

HOUSE PLAN



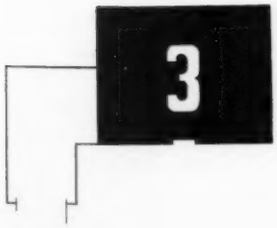


3158 CRANBERRY ROAD

ARCHITECTURAL WORK by

EARL G. VON STORCH

HOUSE PLAN

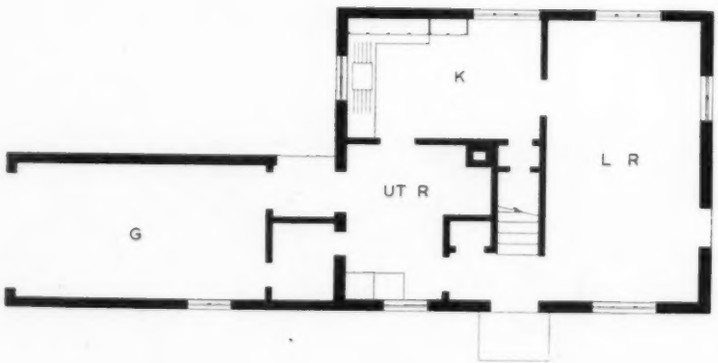


Photographs by F. S. Lincoln

7102 BUCKTHORN

PROJECT MANAGER AND SUPERVISING ARCHITECT—
BARTON P. JENKS, JR.

ARCHITECTURAL WORK by
EARL G. VON STORCH



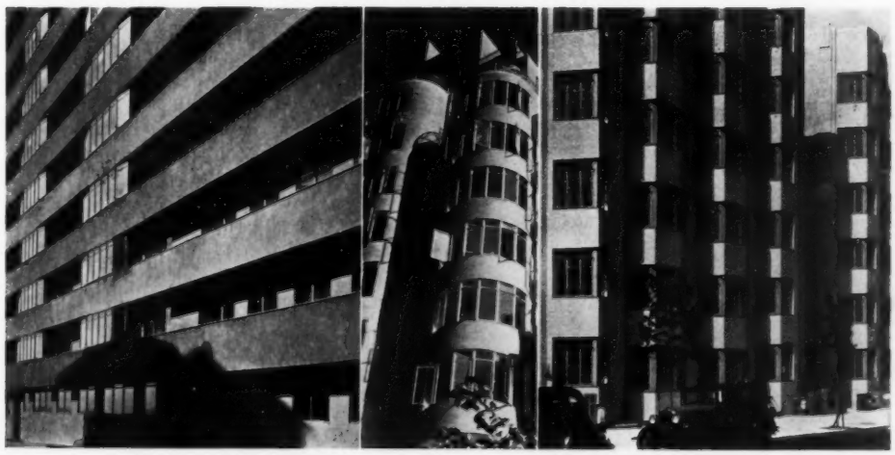
HOUSE PLAN 3

PORTFOLIO

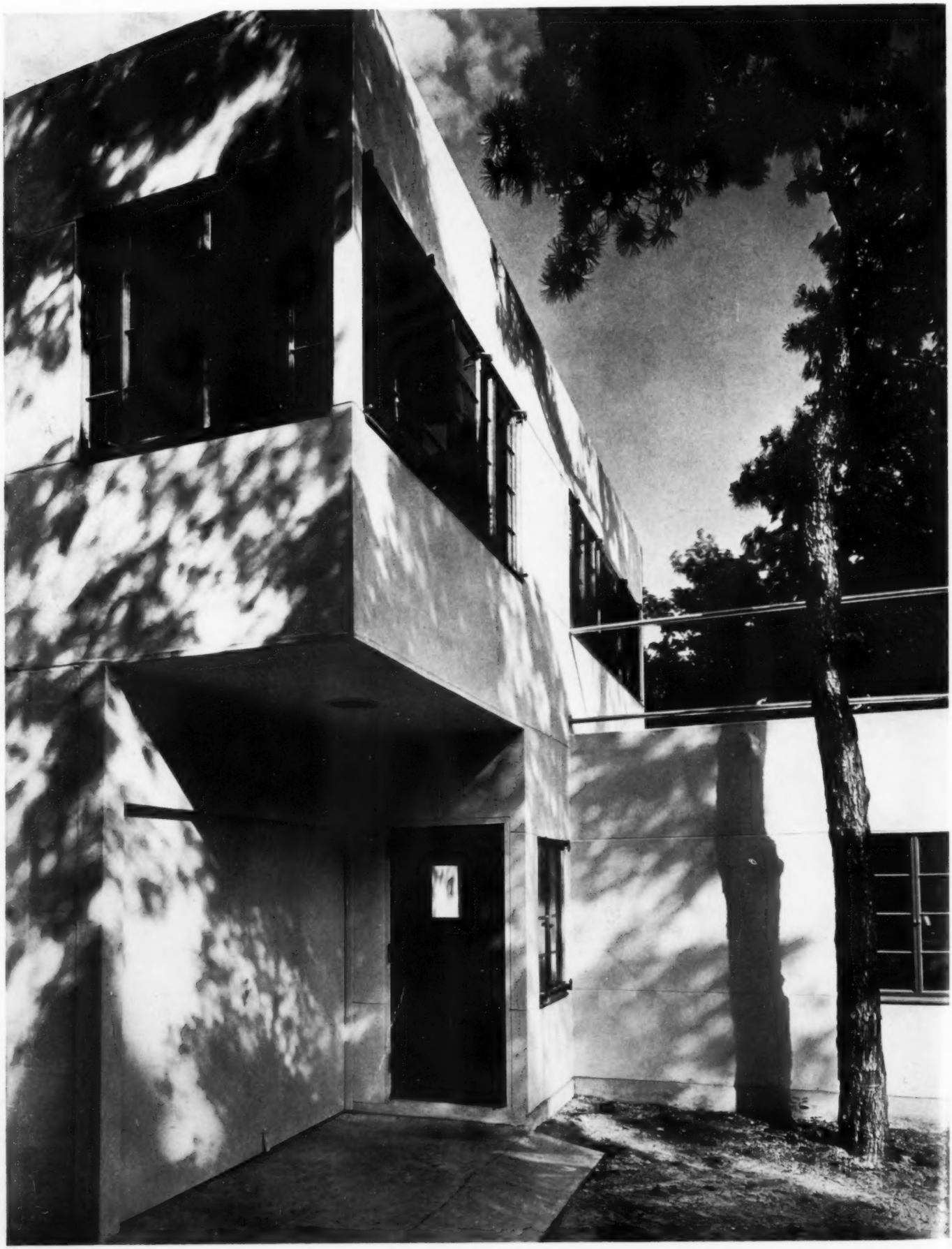
Lincoln

SMALL HOUSES AND

Dell and Wainwright *Van Anda* *Van Anda*



APARTMENT BUILDINGS



Photographs by F. S. Lincoln

HOUSE OF ROBERT L. DAVISON

NORTHPORT, LONG ISLAND

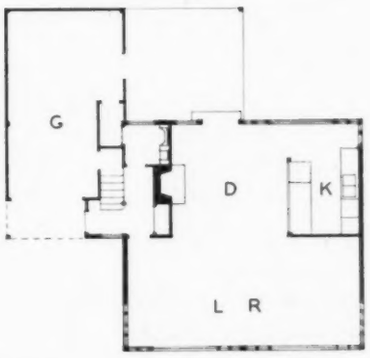
DESIGNED BY ROBERT L. DAVISON
AND JOHN CALLENDER

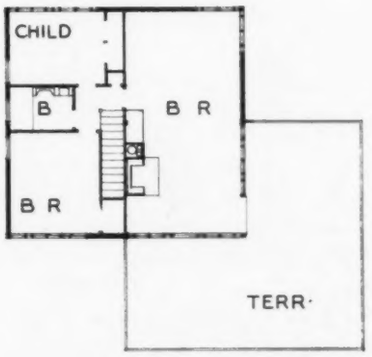
The house of R. L. Davison, Director of Housing Research of the John B. Pierce Foundation, is constructed from two four-room experimental houses, one in plywood previously erected in Grand Central Palace and the other of Microporite, previously erected in Long Island City. After these houses had been used for a period for experimental purposes, they were taken down and later shipped to the present site. Here they were reassembled into this single-family house of entirely different floor plan from the original two houses. (In August 1935 The Architectural Record published floor plans and photographs of the original Microporite house. The original plywood house may be said to be almost identical in design with the Microporite house.)

In planning the house the owner wished to have the living room, dining room, and kitchen arrangement such that it would be easy to entertain 6 to 8 friends with a minimum of effort and formality. Thus the dining room is not separated from the living room and a buffet between kitchen and dining room permits service of meals from kitchen over the open buffet directly to the dining room table.

Special attention was given to orientation of the house. Windows are placed to get maximum sunlight in winter for supplementary heating, also to get as intimate a connection with the surrounding woods as possible.

FIRST FLOOR PLAN





SECOND FLOOR PLAN

HOUSE OF ROBERT L. DAVISON
NORTHPORT, LONG ISLAND

DESIGNED BY ROBERT L. DAVISON
AND JOHN CALLENDER

Photographs by F. S. Lincoln

LIVING - DINING ROOM

BEDROOM

The prefabricated units used in this house differ from those generally found in prefabricated houses in that the units are placed horizontally, transferring the load to columns, instead of being vertical and carrying the loads as a load-bearing wall unit. The horizontal wall units are, in effect, a deep girder which carries the floor-roof load, much the same way as a steel girder in skyscraper transmits the load to a steel column.

The wall units of the first floor are of 4" thick Microporite with an over-all heat loss of approximately 0.17 B.t.u. The floors are of hollow Microporite having a heat loss of less than 0.103 B.t.u. The second floor walls consist of ¼" plywood outer finish with 3½" space between filled with Kimbatts, a new insulating material made from creped wood fiber in bat form. The heat loss through this wall is approximately 0.05 B.t.u. Kimbatts are also used in roof and floor panels of the plywood second story.

Since the plywood house as originally built was merely a study model with no intention of having it exposed to the weather, it was constructed of plywood made with non-waterproof glue. As a result it was decided advisable to cover the exterior with canvas to give the required protection. (If phenol formaldehyde resin glue had been used, it would not have been necessary to use the canvas.) The canvas is cemented to the exterior face of the building with a latex cement. The surface of walls and roof decks are painted with Tornisite, a chlorinated rubber.

Photograph by Gustav Anderson

HOUSE FOR HARMON NATIONAL REALTY COMPANY

ORCHARD HILL, WESTCHESTER, N. Y.

RANDOLPH EVANS, ARCHITECT

SECOND FLOOR

FOUNDATION: poured concrete in excavated portion; concrete block elsewhere. STRUCTURE: wood-framed; exterior walls shingle and stucco; interior walls plaster with tile wainscot in bath. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak in all rooms except bath (tile) and kitchen (linoleum). HEATING: steam system with A.B.C. oil burner and Pierce boiler. INSULATION: blanket-type Rockwool walls and roof. COST: $8,260.

FIRST FLOOR

Photographs by Gustav Anderson

HOUSE FOR HARMON NATIONAL REALTY COMPANY

ORCHARD HILL, WESTCHESTER, N. Y.

RANDOLPH EVANS, ARCHITECT

SECOND FLOOR

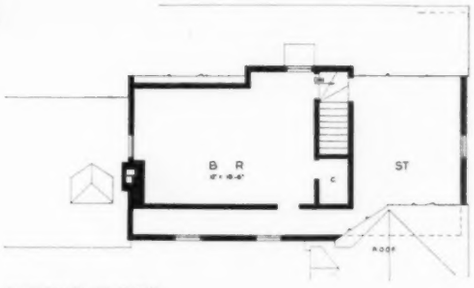
FIRST FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; 4" brick veneer on first floor and chimney end, shingle elsewhere; interior walls plaster; tile wainscot in baths. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement, porch, entry and garage; oak elsewhere except baths (tile) and kitchen (linoleum). HEATING: steam system with A.B.C. oil burner and Pierce boiler. EQUIPMENT: bookcases in living room; kitchen cases. INSULATION: blanket-type Rockwool walls and roof. COST: $10,970.

HOUSE OF THE MISSES E. B. STEVENS AND E. P. CAMPBELL

HARBOUR GREEN, L. I.

RANDOLPH EVANS, ARCHITECT



SECOND FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; shingle and shiplap siding; interior walls plaster; tile wainscot in bath. ROOF: random wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; brick in entry; oak elsewhere except kitchen and porch (linoleum) and bath (tile). HEATING: steam system with Silent-Glow oil burner and Richardson and Boynton boiler. EQUIPMENT: china, book, and kitchen cases. INSULATION: ½" rigid insulation board. Cost: $6,500.

FIRST FLOOR

Photographs by Gustav Anderson

HOUSE OF BRUCE NEWMAN

ORCHARD HILL, WESTCHESTER, N. Y.

RANDOLPH EVANS, ARCHITECT

SECOND FLOOR

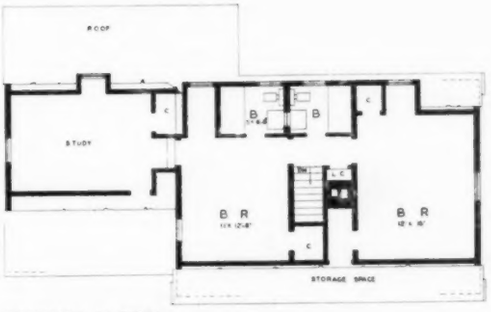
FIRST FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. **STRUCTURE:** wood-framed; stone veneer on garage and entry; shingle facing elsewhere; interior walls plaster; tile wainscot in bath and lavatory. **ROOF:** wood shingles on wood frame; copper flashing. **FLOORS:** cement in basement and garage; oak elsewhere except kitchen (linoleum) and bath (tile). **HEATING:** steam system with A.B.C. oil burner and Pierce boiler. **INSULATION:** blanket-type Rockwool walls and roof. **COST:** $9,620.

HOUSE OF EDMUND S. DAVENPORT

CHATHAM MANOR, N. J.

RANDOLPH EVANS, ARCHITECT



SECOND FLOOR

FIRST FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; shingle facing; interior walls plaster; paneled wall in living room; tile wainscot in bath. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak elsewhere except kitchen (linoleum) and bath (tile). HEATING: steam system with Delco oil burner. INSULATION: Cabot Quilt walls and roof. EQUIPMENT: book, china, and kitchen cases; ironing board. COST: $7,600.

Photographs by Gustav Anderson

HOUSE FOR HARMON NATIONAL REALTY COMPANY
ORCHARD HILL, WESTCHESTER, N. Y.
RANDOLPH EVANS, ARCHITECT

SECOND FLOOR

FIRST FLOOR

FOUNDATION: poured concrete around excavated area; concrete block elsewhere. STRUCTURE: wood-framed; stone veneer on front and right sides; shingle elsewhere; interior walls plaster; tile wainscot in bath. ROOF: wood shingles on wood frame; copper flashing. FLOORS: cement in basement and garage; oak elsewhere except kitchen (linoleum) and bath (tile). HEATING: steam system with A.B.C. oil burner and Pierce boiler. INSULATION: blanket-type Rockwool walls and roof. COST: $9,870.

GREEN ACRES, A RESIDENTIAL PARK COMMUNITY

NEAR VALLEY STREAM, LONG ISLAND

DESIGNED BY IRWIN S. CHANIN

Photograph by Gustav Anderson

A COMMUNITY FOR THE MOTOR AGE

In Green Acres — a "residential park community" of 1,800 homes located on the Sunrise Highway at Valley Stream, Nassau County, Long Island — Irwin S. Chanin, architect, engineer and sponsor, has sought, through the principle of traffic separation and the use of a park system, to deliver the future residents of his project from the menace of the automobile.

Automobile traffic from connecting public highways is carried into the 335-acre site (formerly an airport) by five streets, so routed that while they serve the community itself, they are of no value to through traffic. In general, this is accomplished by feeding each street back into the public highway of origin, thereby eliminating use for short cuts.

About 90 per cent of all homes in the community will front on about 85 private cul-de-sac lanes opening off these five principal streets. Each cul-de-sac group contains at most 18 dwellings. From the head of each cul-de-sac a short concrete footpath leads into the general park system whose walks have a combined length of more than 7 miles.

Photograph by Gustav Anderson

GREEN ACRES, A RESIDENTIAL PARK COMMUNITY

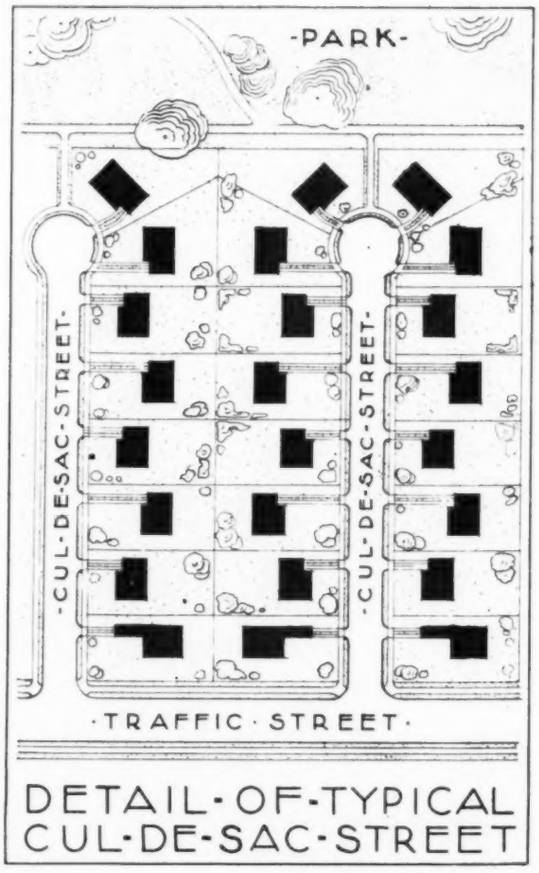
NEAR VALLEY STREAM, LONG ISLAND

DESIGNED BY IRWIN S. CHANIN

These footways are so arranged, in turn, that the shortest and most direct route between points on its borders is by way of the footways. Playgrounds for children, of which there is one for each group of 50 to 75 houses, are so situated in the park system that they are entirely unapproachable by automobile. From about 90 per cent of all homes in the project, a child may pass from its home to the centrally-situated school site without necessity for crossing more than one traffic street.

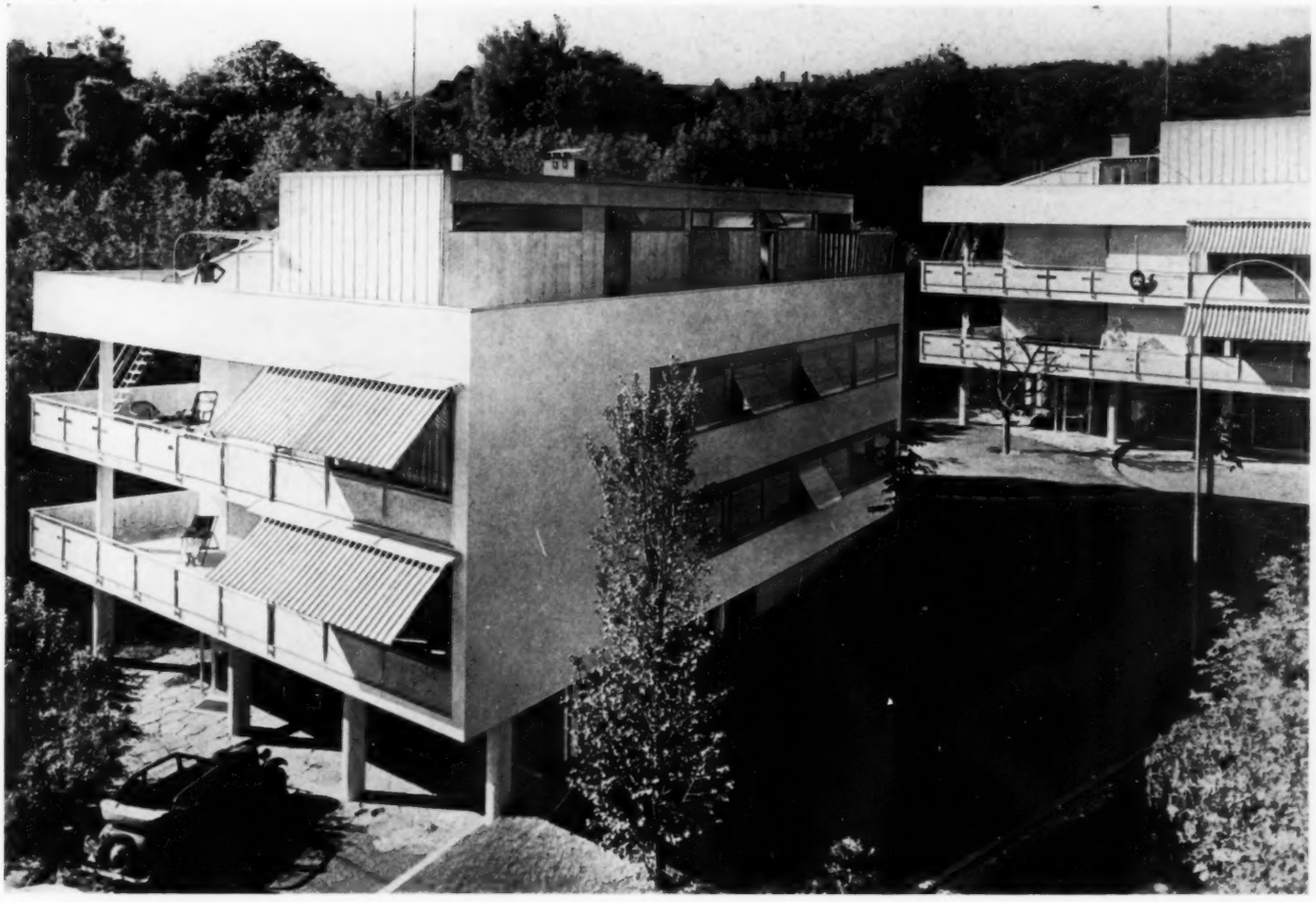
In the general scheme for Green Acres, Mr. Chanin has sought permanent isolation by widening and deepening the streams which form natural boundaries on two sides of the site. Other streams are being developed into features of the park system. Green Acres is planned as a self-contained community with sites for educational, civic and business centers and churches. It will be a community devoid of rows of houses, detached garages, clotheslines and backyards. Houses are set upon the building plots at varying distances from the street line.

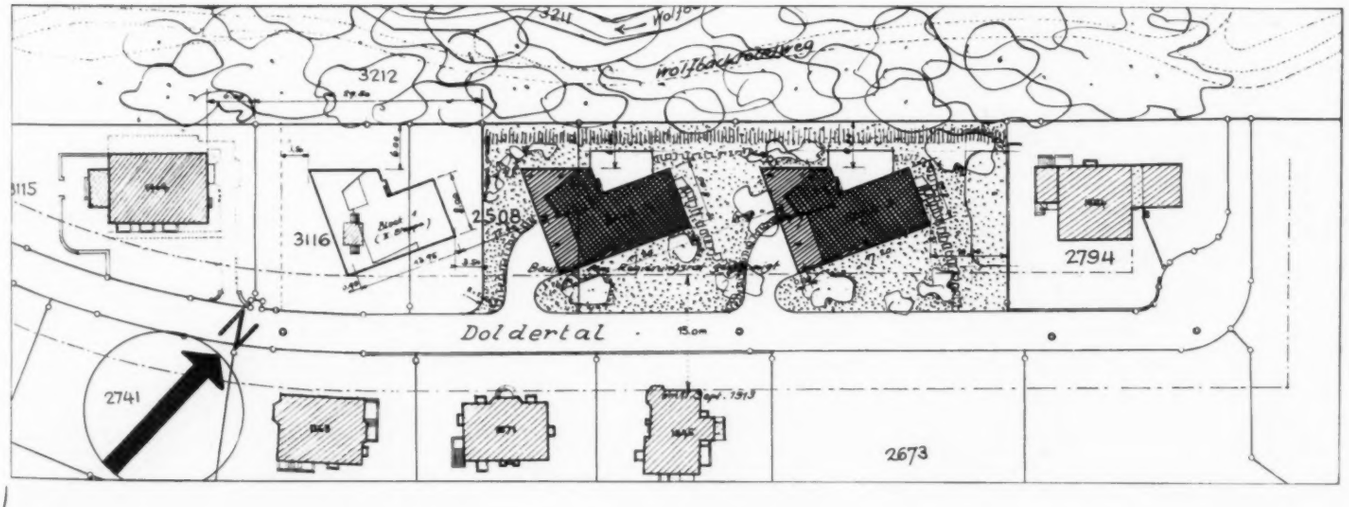
Houses in Green Acres, consisting of five to eight rooms, are priced at $6,490 to $10,000, including garages, wood-burning fireplaces, complete insulation, oil burners, scientific kitchens, and landscaping. The first group of houses, containing 24 adaptations of Cape Cod, Colonial, English and French Manor design, was opened to the public September 5, 1936.



DETAIL-OF-TYPICAL CUL-DE-SAC-STREET

Photograph by Finsler





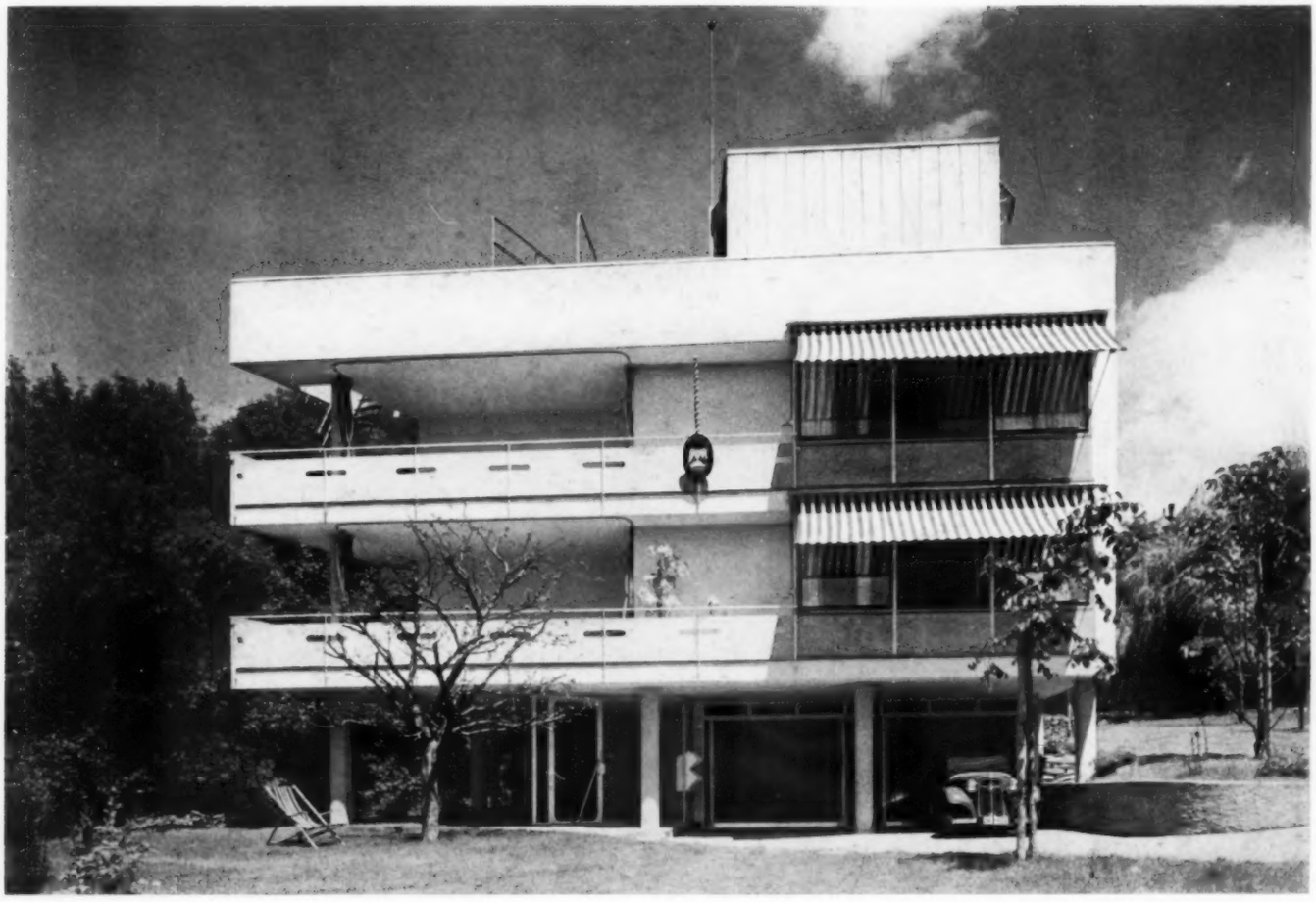
APARTMENT HOUSES FOR SIMPLIFIED AND PLEASANT LIVING

ZURICH, SWITZERLAND

ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

The apartment houses are grouped with plans placed diagonally. This permits unobstructed views in all directions; also, main façade with its living rooms is toward south. The two apartment buildings will be supplemented later by a third unit. The plot faces on a park.

Photographs by Finsler

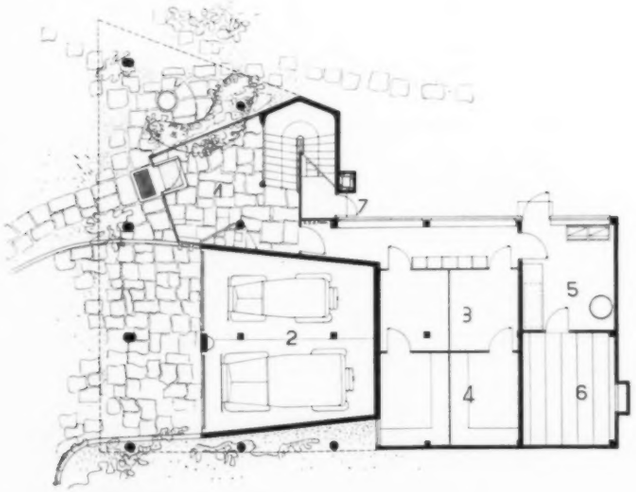


There are two apartment floors and penthouse apartment on roof.

APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

1 Glazed lobby
2 Garage
3, 4 Storage
5 Laundry
6 Drying
7 Service entrance
8 Hallway
9 Living room
10 Terrace with curtain for sunbathing
11 Kitchen
12 Library
13 Bedroom
14 Bedroom
15 Bath
16 Linen
17 Bedroom
18 Balcony



GROUND FLOOR PLAN

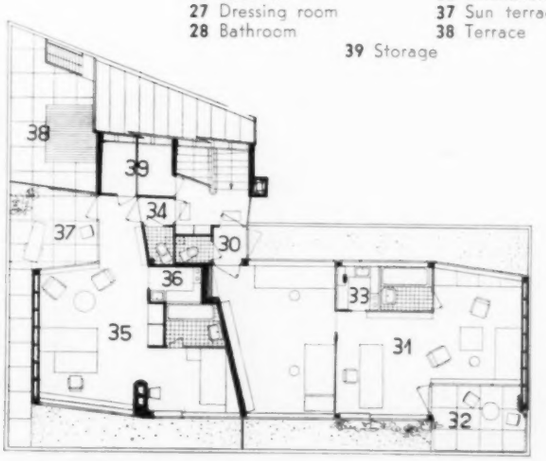
FIRST FLOOR PLAN

South elevation showing glazed entrance hall, garage at right, also outdoor porches.

ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

19 Hall
20 Sun terrace
21 Kitchen
22 Living room
23 Music room
24 Bedroom
25 Bedroom
26 Bedroom
27 Dressing room
28 Bathroom
29 Servants' room
30 Foyer
31 Atelier
32 Porch
33 Kitchenette
34 Hall
35 Living room
36 Kitchenette
37 Sun terrace
38 Terrace
39 Storage

SECOND FLOOR PLAN



PENTHOUSE FLOOR PLAN

Photographs by Finsler

APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

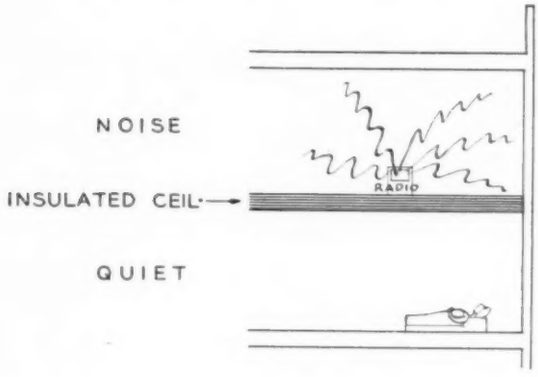
1

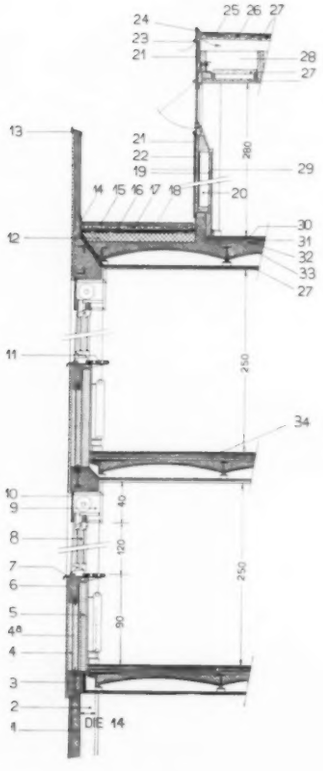
Above: LIVING ROOM OF ALFRED ROTH. Furniture designed by Alfred Roth and Marcel Breuer. Right: 1 SECTION OF BUILDING; 2 FLOOR SYSTEM READY FOR POURING CONCRETE, showing reed forms.

2

ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

Above: DRAFTING ROOM OF ALFRED ROTH.
Right: STAIRWAY.





EXPLANATION:

1 FOUNDATION WALL
2 STEEL COLUMNS
3 GIRDER
4 HOLLOW TILE, 4"
5 GYPSUM BLOCK, 2¾"
6 STUCCO
7 ZINC-COATED SILL
8 SIDE SLIDING WINDOWS
9 AWNING WITH SLATS
10 TRANSITE PLATE COVER
11 WINDOW SILL (PERFORATED SLATE)
12 CONCRETE
13 COPPER
14 FLASHING
15 CONCRETE, 2"
16 SAND AND GRAVEL
17 BUILDING PAPER AND GRAVEL
18 CORK INSULATION, ¾"
19 SHEATHING
20 AIR SPACE
21 SPUN GLASS INSULATION
22 TRANSITE FACING
23 VENTILATION
24 COPPER CAP
25 TAR AND GRAVEL
26 SHEATHING
27 SLAB ROOF
28 AIR SPACE
29 BIRCH VENEER
30 LINOLEUM
31 FLOATING CONCRETE, 2"
32 CORK
33 AERATED CONCRETE
34 WOOD FLOORING

APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

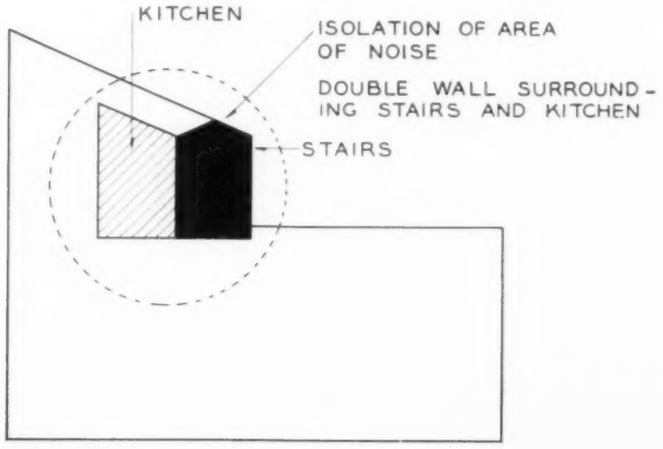
ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

The architects endeavored to create apartments in a partly wooded section which would offer the more familiar advantages of the one-family house. Rooms were so arranged in conjunction with terraces as to permit enjoyment of surrounding trees and scenery.

THE PLAN

Houses were grouped with plans placed diagonally. This method of placing the apartment buildings resulted in no façade facing another and the main front is toward the south. The living room fronts toward the sun and view and bedrooms are away from the street.

The stairs and kitchen are grouped so that the two units can be insulated against passage of noise to the apartments. At the same time the kitchen is centrally placed. Its entrance is next to the living room entrance and has a serving window to dining room and a window to receive delivered packages.



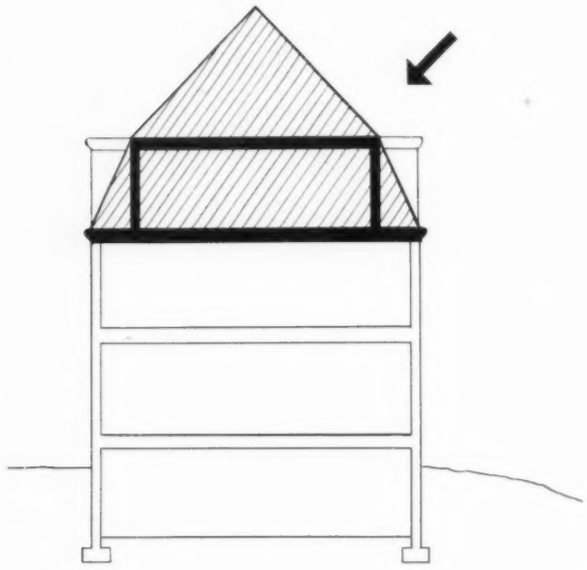
LIGHTING

Day lighting. All rooms have a maximum source of daylight by means of large planes of glass. There is provision, by operating windows, for rapid ventilation. The large glass areas require curtains for control of heat and light. During sunny days of winter the extensive windows permit heating of rooms by the sun with a consequent reduction of artificial heating.

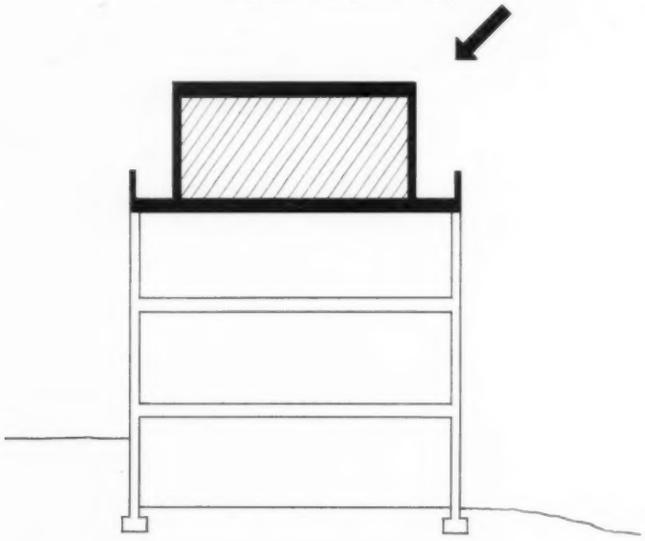
Night lighting. It is possible at night to have indirect illumination in all bedrooms, living rooms and working areas by means of specially designed wall and ceiling fixtures. The general lighting of the room is by adjustable wall lamps placed 6 feet from the floor.

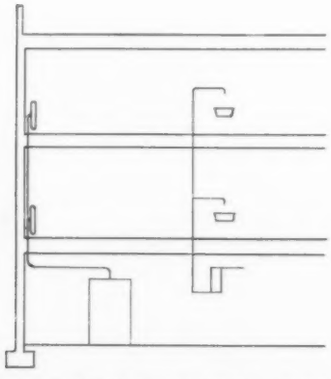
LIVING ROOM FIREPLACE

Photograph by Finsler



MORE USABLE SPACE





PLUMBING & HEATING PIPES GROUPED & INSULATED TO PREVENT HEAT LOSS, NOISE & AGAINST COLD

APARTMENT HOUSE GROUP

ZURICH, SWITZERLAND

ALFRED AND EMIL ROTH, MARCEL BREUER, ARCHITECTS

CONSTRUCTIONAL AND TECHNICAL APPLICATIONS

Skeleton steel frame permitted a curtain wall construction. Outside wall is nonbearing, attached to steel floor system.

The following possibilities for cracks in wall and ceiling surfaces were considered: (a) uneven settling of building; (b) strains inside the framework through differences in outside and inside temperatures; (c) deformation of ceiling through changing deflection.

Point (a) was solved by placing the steel framework on a steel girder grillage. One wall of the building extends into the ground on one side and has a reinforced concrete foundation wall which is independent of the framework. The stairway is treated as a tower and a free-standing concrete inclosure.

Point (b). Façades are outside the columns. This prevents deformation inside the framework due to differences in temperature. Columns are not connected with the façade and are insulated.

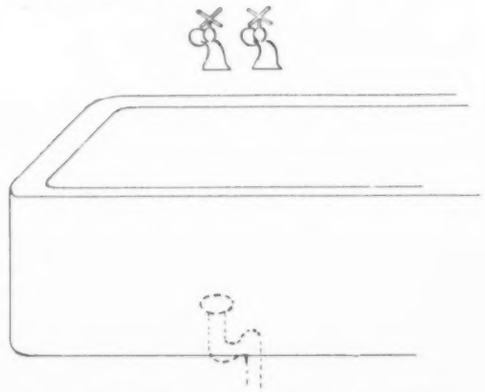
Point (c). Ceilings were systematically cut off from the façade, thereby preventing cracks. The penthouse has a lightweight construction for the outside wall (see section). It consists of wood framing faced with builders' felt as a lining, and faced outside with Transite for finish. Transite has proved itself completely satisfactory as an exterior surface. In this penthouse wall use was made of spun glass as an insulation material. This is not affected by dampness or chemical influences. It also does not corrode in conduits. Spun glass was also used for insulation of pipes in walls.

THE UPKEEP OF THE EXTERIOR

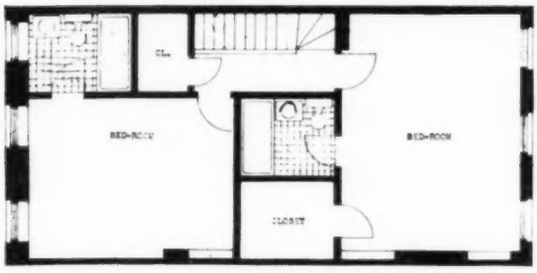
Materials requiring minimum cost upkeep were used. These included Transite, stucco and copper.

HEATING AND HOT WATER

The heating of each apartment is by hot water with separate boilers for each apartment.

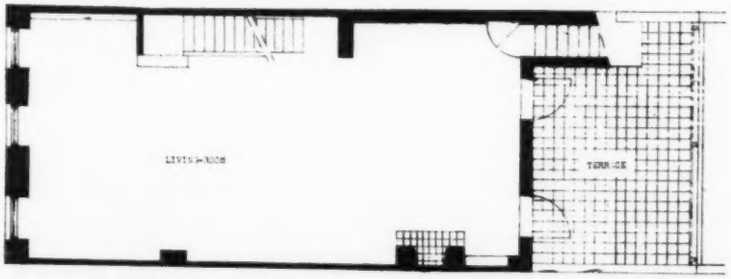


SILENT FAUCETS AND QUIET, NON WHIRLPOOL DRAINS



1 BEDROOM FLOOR

2 GROUND FLOOR



3 MAIN FLOOR

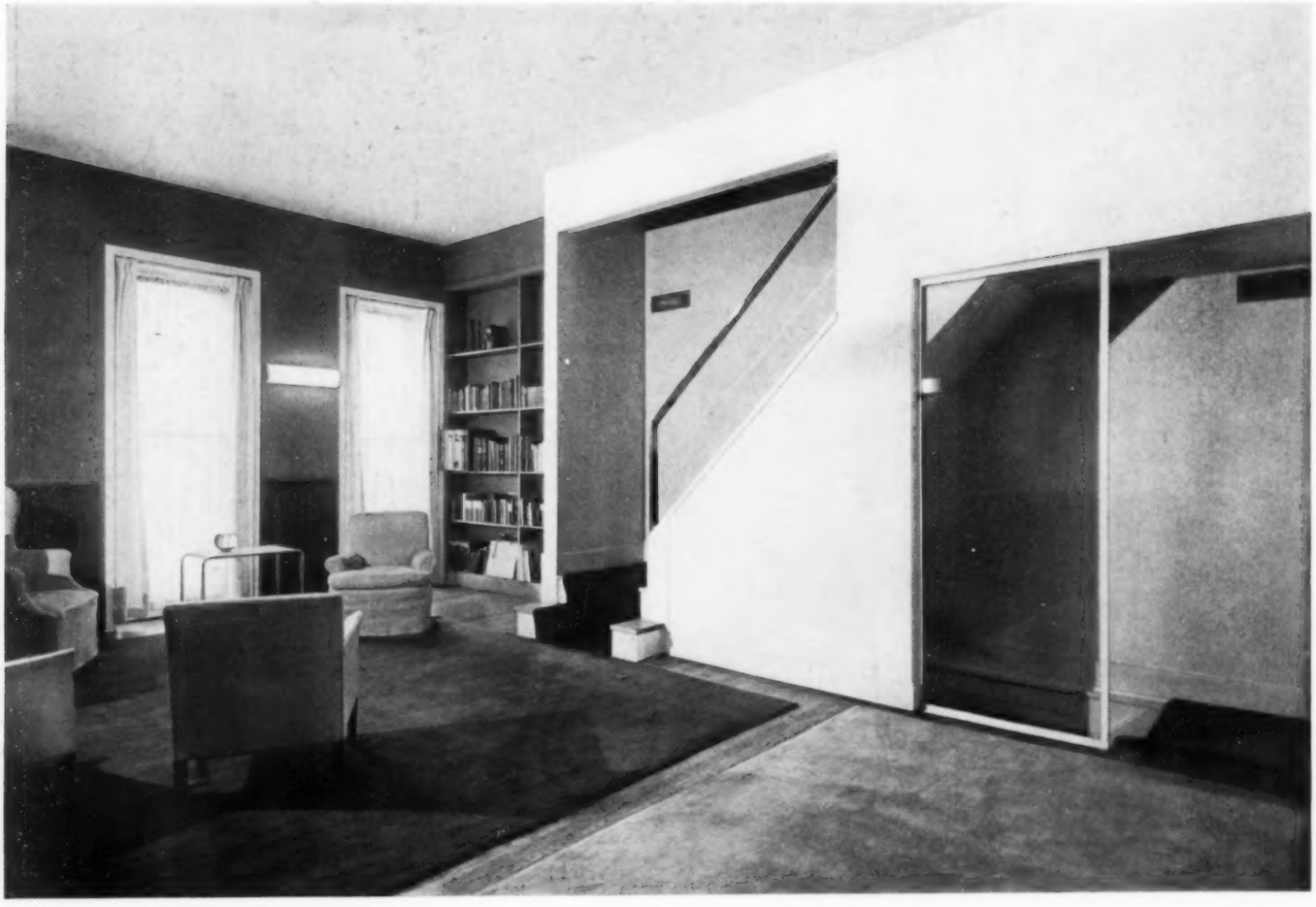
REMODELED APARTMENT OF W. H. LABROT

NEW YORK CITY

WILLIAM MUSCHENHEIM, ARCHITECT

In altering this house the high stoop was removed, which created an English basement entrance with the service entrance off the vestibule (see plan 2). The dining room with terrace above, added to the rear of the house, was designed with the idea that it would become a part of the garden. Stock factory sash were used. The kitchen has forced ventilation. The terrace over the dining room leads off the large living room which takes up an entire floor without any dividing partitions (see plan 3). This necessitated the boxing in of the staircase in order to support the floor beams above.

The bedroom floor was rearranged so as to procure a large master's bedroom overlooking the garden (see plan 1).



REMODELED APARTMENT OF W. H. LABROT

NEW YORK CITY

WILLIAM MUSCHENHEIM, ARCHITECT

Above: LIVING ROOM
Right: DINING ROOM WINDOW

Photograph by Dell and Wainwright

Frontage of building facing the sea and showing main entrance.

EMBASSY COURT APARTMENTS

BRIGHTON, ENGLAND

WELLS COATES, ARCHITECT

CHARACTER OF BUILDING. Apartments to provide vacation and all-year accommodations at England's swankiest seaside resort. There are nine types of flats ranging from single-room to multiple-room suites renting for from $750 to $2,500 per year.

PLAN. The building is on a corner plot with frontage toward the sea. The L-shaped building has a free area at the rear with accommodation for a series of private lock-up garages. Floors 1 to 8 include seven flats each. The largest is at angle of building and contains a living room of large size with a recessed drawing room separated by a sliding partition. In addition, there are three bedrooms, kitchen, baths, etc.

The ground floor is planned with a lounge, foyer and small-size apartments. A banking room occupies the corner of the L at ground floor.

The basement provides space for storage, heating plant, and a garage.

"The site on a sea-front," writes the architect, Wells Coates, "is not the most propitious parade-ground for the conscientious exponent of modernism, for his building is apt to be judged at once by its elevation, especially when its neighbors are emphatically façade-ridden."

The apartments between the ground and ninth floor all have balconies, either open or inclosed in a sun-bay. There are galleries at rear used for service and also providing stairway access to upper apartments. Elevators serve for normal access.

STRUCTURE. The building loads for Embassy Court are taken on three rows of reinforced concrete piers, spaced to suit the typical floor plan. There are continuous balconies on both sides of the building, cantilevered to the concrete floor slabs.

The floors are of hollow tile obviating need for cross floor beams. Three projecting staircases at rear are used as stiffeners to the structure. The exterior wall facing is of 4½" reinforced concrete, backed with cork and finished with a ¼" facing of plaster. Outside the surface finish is of waterproof cement, light cream in color.

INTERIOR TREATMENT. The floors in apartments are of ⅜" cork squares. The landing space for elevators has a composition floor, also laid out in squares.

The furniture for foyer and in exhibition apartments wes designed by the architect.

Photograph by Dell and Wainwright

Photograph by J. J. G. Saunders & Sons

EMBASSY COURT APARTMENTS

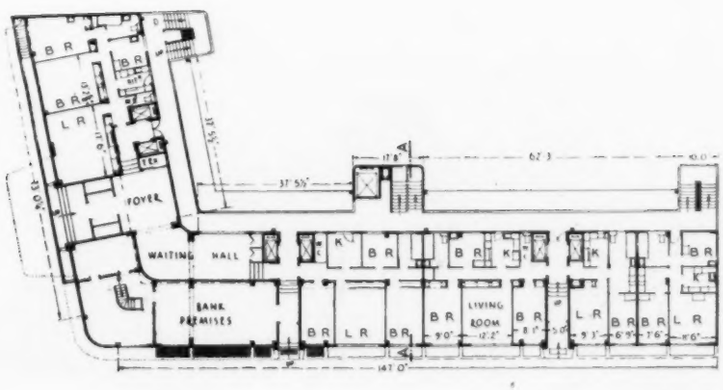
BRIGHTON, ENGLAND

WELLS COATES, ARCHITECT

LEFT: View of building from side street, looking toward sea. All apartments have balconies, either glazed or open.

ABOVE: Detail of sun-bay with windows that slide, affording unobstructed opening.

RIGHT: The ground floor plan provides a foyer, waiting room, banking room and apartments of lesser size. The three outside stairways serve as stiffeners to the structure.

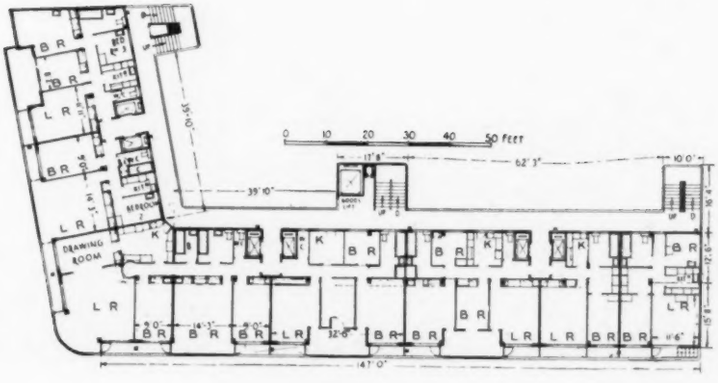


Photographs by Dell and Wainwright

EMBASSY COURT APARTMENTS

BRIGHTON, ENGLAND

WELLS COATES, ARCHITECT



LEFT: Court with inclosed stair towers.

ABOVE: Sun balcony, from living room.

RIGHT: Typical floor plan with apartments ranging in size from single rooms to nine rooms.

Photographs by George H. Van Anda

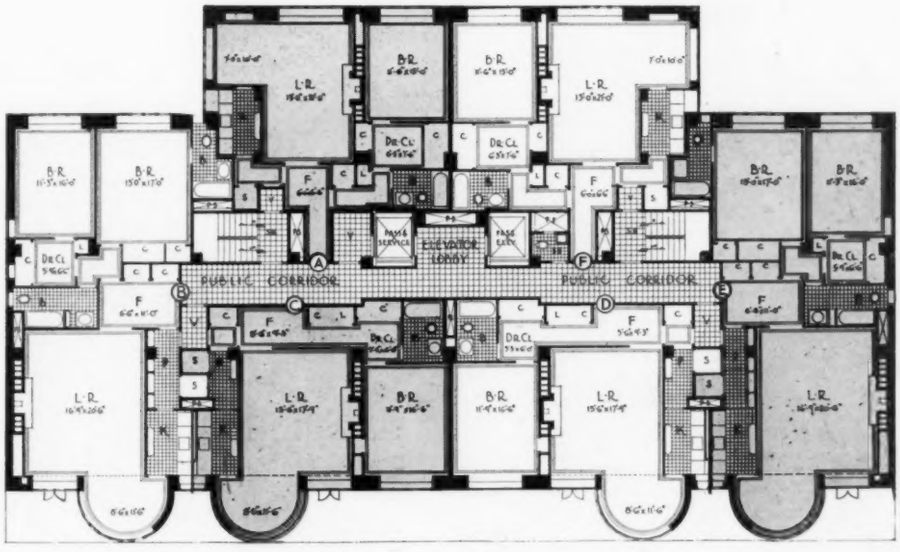
ROCKEFELLER APARTMENTS

NEW YORK CITY

HARRISON AND FOUILHOUX, ARCHITECTS

The new Rockefeller Apartments comprise two structures on a plot 125 feet wide running through the block from 54th to 55th Streets. A garden, varying in width from 48 to 78 feet, will connect the two buildings at ground level. They will also be joined by an underground passage. The lower nine stories will be full floors, the tenth floor will have a setback on east and west sides. The top stories will be set back on all four sides. Here there are several penthouse apartments and also sun decks. Within the building there is space for a restaurant, playrooms, storage, and a drug store.

Rents range from $1,000 to $3,000 per year, excepting that penthouse apartments of three and four rooms rent from $2,700 to $3,500.

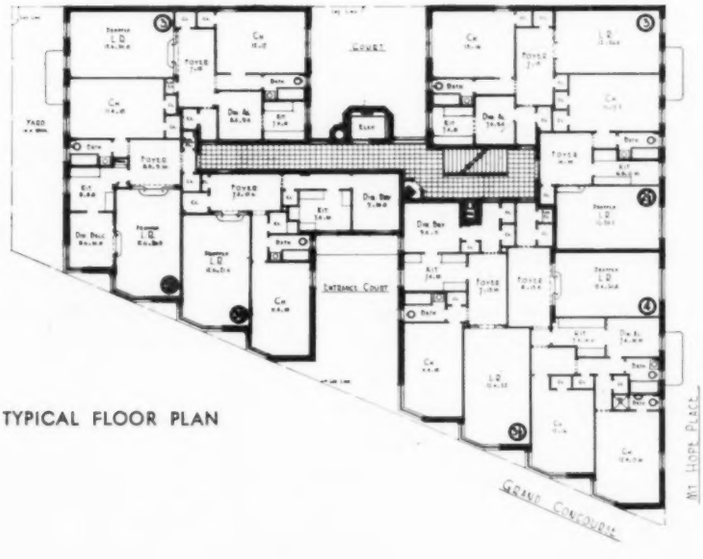


Photograph by George Van Anda

APARTMENT BUILDING AT GRAND CONCOURSE AND MT. HOPE PLACE

NEW YORK CITY

CHARLES KREYMBORG, ARCHITECT



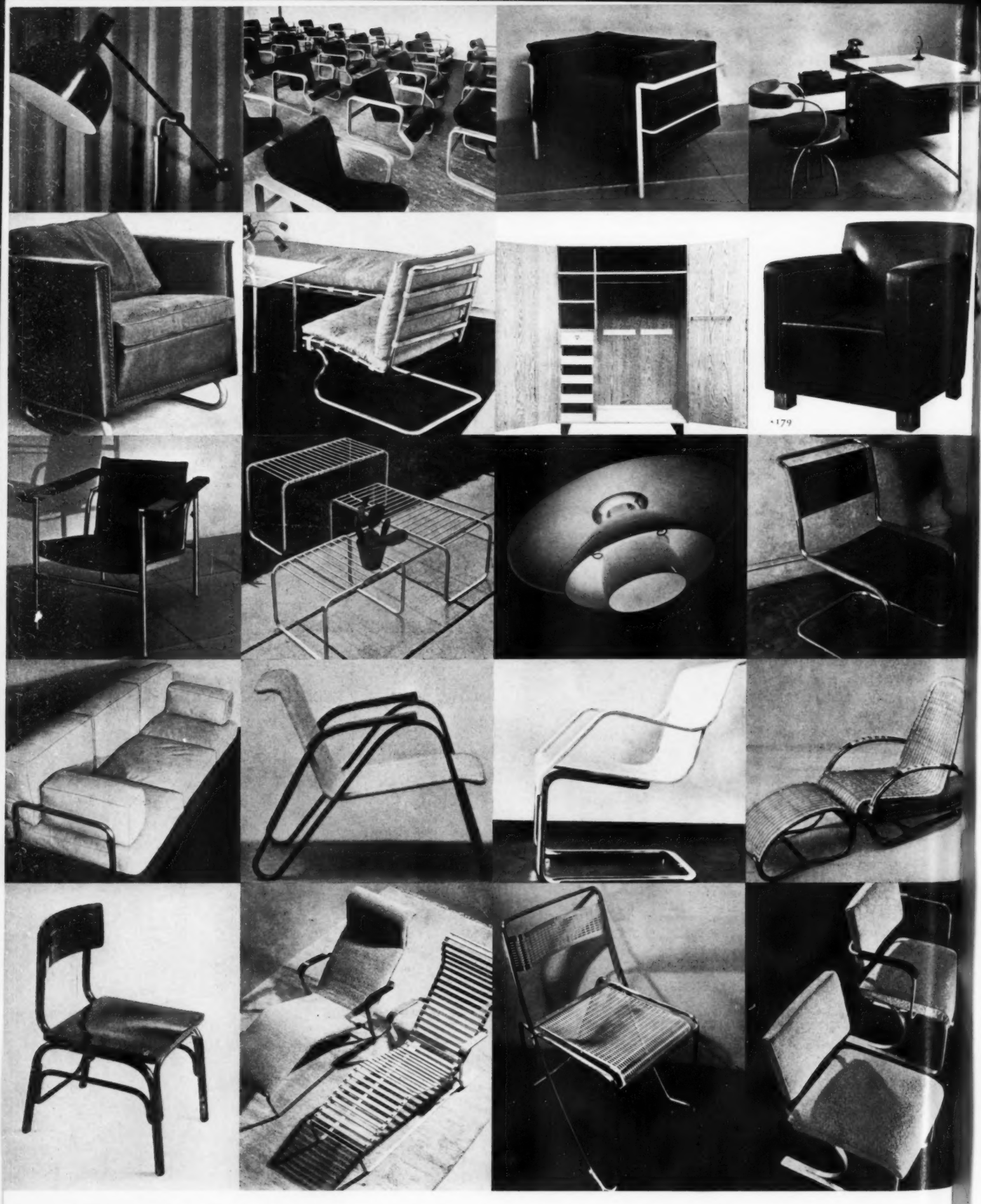
TYPICAL FLOOR PLAN

APARTMENT BUILDING

BASEL, SWITZERLAND

OTTO SENN AND RUDOLF MOCK, ARCHITECTS

ROOF TERRACE



Furniture Types, left to right: **1** reading lamp, Frederick Kiesler, Architect; chairs of plywood by Alvar Aalto, Architect; upholstered chair wit metal frame by Le Corbusier and Charlotte Perriand; desk and chair by Heinrich Lauterbach, Architect; **2** upholstered chair by Adolf Schneck, Arch tect; metal chair and seat with upholstered cushions by Marcel Breuer, Architect; wardrobe, Japanese; upholstered chair, Bock & Feil; **3** metal cha with leather seat and arm rests, Le Corbusier and Charlotte Perriand; nest of plant stands, Wohnbedarf; P-H lamp; metal chair, canvas seat, Marc

THE APARTMENT INTERIOR

ITS PLANNING AND FURNISHING

BY WILLIAM MUSCHENHEIM

The old affinities of traditional design having been lost, how is the architect to create the interiors of apartments and houses so as to be in character with new standards of living?

The urban apartment will, perhaps, be first to respond to the new affinities. The demand of clients for increasing conveniences and comforts has gradually changed the purposes and character of rooms and given a totally new appearance to furniture and furnishings. Among the changed prerequisites of apartments that have influenced or dictated change must be mentioned a need for natural cross ventilation, regard for orientation so as to gain utmost advantage of sun, light, cool summer breezes and even shade. A pleasant outlook is also one of the dominating factors in arrangement of rooms and windows. The advantageous outlook is frequently combined with possible open terraces. All of these considerations are, in a large degree, dependent on municipal plan and, therefore, are not in reality within the scope of this article.

Modern methods of skeleton construction have made possible, to the architect, a far greater flexibility of plan arrangement. Solid masonry walls are no longer essential as supports to floor so that light walls, penetrated at will by windows, have become the logical procedure. Apartments have become more open with fewer separating partitions, excepting soundproof barriers between one apartment and another and adjoining hallways. Solid walls also surround such permanent installations as baths, toilets, kitchens and laundry. Bedrooms, as a rule, require a complete separation from the rest of the apartment, but this need not necessarily be accomplished by means of a masonry wall or other kind of permanent partition. It can, for example, be accomplished successfully by the placing of a shallow wardrobe to obtain separation and privacy.

The object of eliminating partitions that are not urgently needed is, primarily, to actually increase usable space and at the same time to add an appearance of roominess.

Economy in arrangement of space is imperative because of the prevailing high cost of construction. Economy and efficiency are desirable also from the point of view of maintenance for both apartments of luxury and low-cost type.

With these factors in mind, it will be obvious that small hallways and many doors are to be avoided, but with careful attention applied to the main living space that can be subdivided to suit various functions by means of movable partitions or curtains. A further saving in space may be accomplished by the careful planning of built-in wardrobes, sectional cabinets, and mechanical equipment.

Since the exterior walls can, if desirable, be entirely of glass, either in the form of long horizontal ranges of windows, large fixed panes of plate glass (clear, obscure or light-projecting) or of glass brick, the interior spaces can be much more efficiently lighted in the daytime and the general interior arrangement and grouping of furniture will accordingly suit the sources of daylight. An informal arrangement of furniture with accompanying eliminations of all unnecessary adjuncts will insure maximum comfort through a minimum of means. The final result can be made most pleasing by the correct selection of materials and colors having differences in shading, determined by location, personal preference and individual means. For the few who happen to own authentic pieces of old furniture they do not wish to part with, discretion and taste must be exercised. In reality the modern apartment should not be so formal that personal objects cannot be admitted to the scheme of furnishing. The following pages of illustrations show some examples of the judicious combination of old furniture in a modern setting and also a combination of traditional and new furniture.

The successful apartment should be a background or space for living. The purpose of the apartment is to facilitate pleasant and convenient living and consequently it would be a mistake to lay too much emphasis on a decorative result. Cleanliness of design of the various parts is of first importance, followed by due attention given to a right use of materials and a scrupulous selection of each material for its particular use. The process

Breuer, Architect; **4** box spring on metal frame with loose cushions, Adolf Schneck, Architect; metal frame chair, slung reed seat and back, Erich Dieckmann; chair with seat, back and arms from single piece of plywood, metal base, Alvar Aalto, Architect; reclining chair and footrest of wicker, Erich Dieckmann; **5** chair of bentwood, plywood seat, Ferdinand Kramer; terrace chairs of aluminum, Marcel Breuer, Architect; chair with aluminum frame, seat and back, Alfred Roth, Architect; chairs of flat bar, noncorroding metal, seats and backs upholstered, Marcel Breuer, Architect.

for combining one material or object of furniture with another must be studied to obtain the best result. There are three kinds of furniture to be considered by the architect: (1) built-in, (2) standardized or mass-produced, (3) furniture that is specially designed. The actual selection will be dictated by specific needs, budget and what is obtainable on the market. The illustrations on page 306 are examples of different kinds of furniture that have recently been on the market in various localities. It might be noted that nearly every one of these was designed by a well-known architect. Although standardization of furniture or fabrics is desirable, yet the purpose is to attain reasonable variety. We can very well learn a lesson from the Japanese who achieve variety in the use of units of matting of similar size as a basis for determining room shapes and for placing furniture.

Hardware is available that is good in form and at the same time appropriate for use. Such hardware assures a shipshape appearance that is pleasant to eyes that have become accustomed to airplanes and streamlined trains. Technical perfection has set new standards of finishes and appointments. This does not mean that our homes should take on the atmosphere of the hospital. Whatever degree of warmth, richness or coziness is desired, can still be produced through the correct disposition of furniture, colors, textures and surfaces.

Aside from consideration of such practical items as arrangements of furniture, the adept use of artificial lighting can intensify and improve colors and textures and identify areas. The same principles of restrained design apply to lighting fixtures as to hardware. These fixtures would, naturally, not follow such outmoded prototypes as Colonial lanterns or classical candelabra.

Fine hand craftsmanship, which flowered in a different age, is being replaced by the machine. It was found by experience that "imitative crafts design" incurred waste in cost of production. The machine, it was discovered, could invest its product with a new idiomatic aesthetic quality. For many years now, architects and other designers both in this country and abroad have shared the common purpose of designing exclusively for the potentialities of the machine in aesthetic merit and economy. Both objectives—economy and appearance—demand simplicity of form and fine finish. Accordingly an idiom of artistic expression is arising in the industrial arts which the architect may use to harmonize new buildings with their contents. This means a new wealth of materials for use by the architect including plywood, plastics, noncorroding and polished metals, glass, fabrics, and a variety of wallboards.

The selection of flooring is an important influence in producing a desired quality or atmosphere. An arrangement of interlocking spaces can be helped by distributing different flooring materials and differing floor coverings. This can be further heightened by change in color. Apart from the usual narrow strip flooring which can be covered with rugs or carpets, there are many other kinds obtainable, such as rubber, cork, linoleum, pressed wood fiber, quarry tile, and magnesite. The selection will depend entirely on use, the general arrangement of spaces, furniture, and the degree of warmth, coolness or richness desired.

Since ceilings usually comprise the largest unbroken area of a room or rooms, they are particularly adapted to acoustical treatment either by use of special sound-absorptive plaster or by the application of acoustical tile. The ceiling finish must also be suited to effective distribution of artificial light that is either by direct or indirect means.

Aside from plaster, there are many different kinds of wall finishes. Large wallboards, newly developed by industry, frequently fit particular requirements. These are readily installed and are frequently advantageous because of their sound-absorptive quality. The unit width of four feet often has a desired influence on room design.

Doors and trim should be flush, warm to the touch and with a smooth surface. The door is no longer a feature to be decorated either with molds or other pattern. It can, however, be given interest by application of color and made to relate to the color scheme of the room.

Horizontal window areas are more efficient and conform to line of vision. Daylight that is excessive can be controlled by use of curtains and blinds. Where there are terraces, folding or sliding doors join the interior living space with the outside and thus appreciably augment the feeling of size.

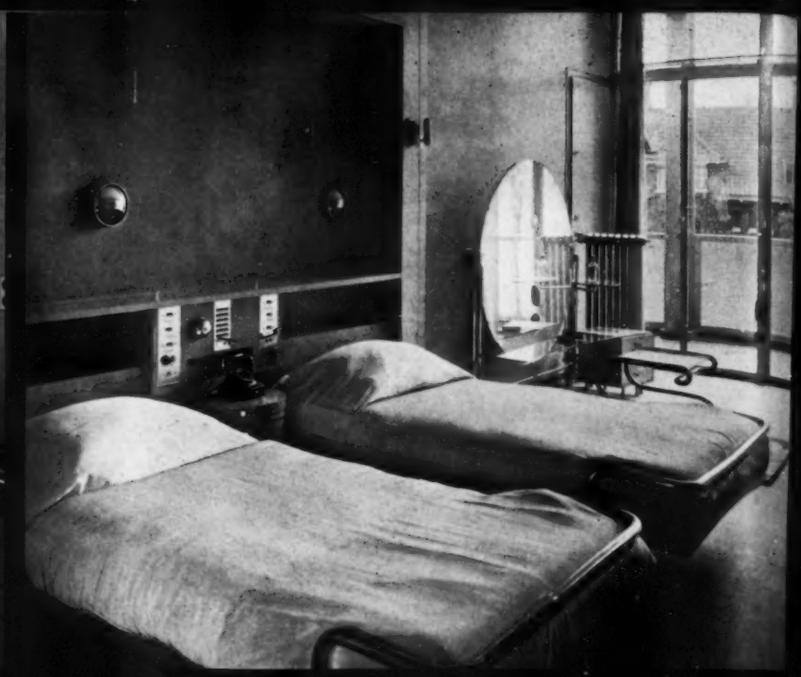
The selection of illustrations which accompanies this text was dictated by a desire to comprehend work done in recent years by architects in the United States and other countries. It was deemed unwise to follow a strictly chronological sequence. The work represented covers approximately the past twelve years.

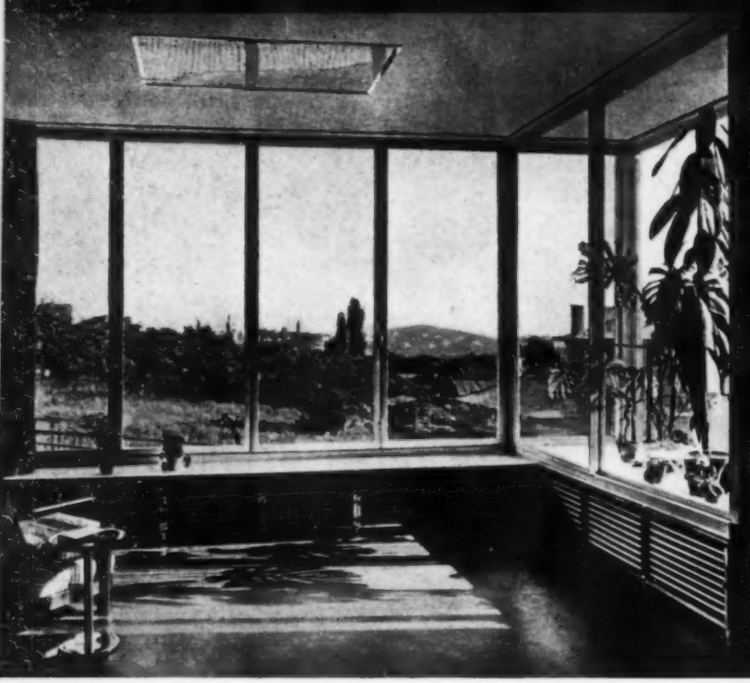
1 STAIR HALL, VILLA SAVOYE, POISSY, FRANCE. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
FREE-STANDING REINFORCED CONCRETE COLUMNS AND SPIRAL STAIRS AS ELEMENTS OF DESIGN IN THEMSELVES, WHEREVER THEY OCCUR NATURALLY. EXTERIOR WALL BECOMES MERELY A GLASS SCREEN WITHOUT RELATION TO STRUCTURAL MEMBERS.

2 DINING ROOM IN HOUSE OF MOHOLY-NAGY, DESSAU. WALTER GROPIUS, ARCHITECT.
AN EXAMPLE OF VERY SHARP DEFINITIONS AND ACCENTUATION OF CHANGES IN PLANES AND MATERIALS.
Photo, courtesy of Wohnraume der Gegenwart.

3 CORNER OF LIVING ROOM IN VIENNA. ERNST PLISCHKE, ARCHITECT.
SOLUTION OF BUILT-IN CUPBOARDS AND RADIATOR INCLOSURES THROUGH THE USE OF LARGE PLYWOOD PANELS, VERY CAREFULLY PROPORTIONED. ALABASTER SHEET IN FRONT OF RADIATOR.

4 BEAUX-ARTS APARTMENTS, NEW YORK CITY. KENNETH M. MURCHISON AND RAYMOND HOOD, GODLEY AND FOUILHOUX, ARCHITECTS.
STOCK WINDOWS IN HORIZONTAL STRIPS AND AROUND CORNERS.



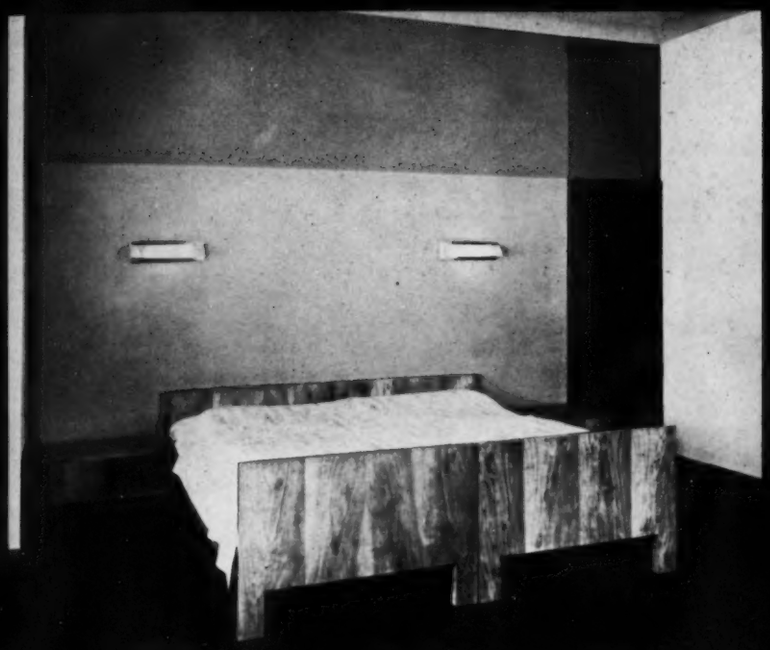


1 BEDROOM, APARTMENT HOUSE IN BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
ALL THE ESSENTIALS—LIGHT, OUTLOOK, AIR, HEAT. NO SUPERFLUITY OF OBJECTS OR DETAIL.

2 BEDROOM IN VAN DER LEEUW HOUSE, ROTTERDAM. BRINKMAN AND VAN DER VLUGT, ARCHITECTS.
MECHANICAL EQUIPMENT IS CONTROLLED FROM BEDSIDE WITH NEATLY DESIGNED HARDWARE AND DETAILS.

3 SUN PORCH AND CONSERVATORY, HOUSE IN HUNGARY. PAUL LASZLO, ARCHITECT.
DOUBLE GLAZING CREATES EXCELLENT SPACE FOR PLANTS.
Photo, courtesy of L'Architecte.

4 LIVING ROOM, HOUSE AT VILLE D'AVRAY, FRANCE. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
HORIZONTAL SLIDING PLYWOOD PANELS IN FRONT OF BOOKS MAKE AN INTERESTING WALL TREATMENT. FREE-STANDING FIREPLACE IN CENTER OF ROOM.



1 BEDROOM, APARTMENT IN VIENNA. ERICH KURT RICHTER, ARCHITECT.
DIVISION OF WALL INTO VARIOUS FIELDS OF COLOR ACHIEVES AN UNUSUAL BACKGROUND FOR TWIN BEDS.

2 CORNER OF PLAYROOM, APARTMENT IN VIENNA. ERICH KURT RICHTER, ARCHITECT.
SHELVES PAINTED MANY BRIGHT COLORS AND TREATED LIKE BUILDING BLOCKS MAKE A GOOD SETTING FOR TOYS.

Photo copyrighted by Blumberger-Schulz.

3 DINING ROOM AND LIVING ROOM, VIENNA. LEONIE PILEWSKI, ARCHITECT.
RESTRAINED SIMPLICITY CREATES LIVABLENESS WITH ECONOMICAL MEANS.

4 CORNER OF BEDROOM, APARTMENT IN VIENNA. ERICH KURT RICHTER, ARCHITECT.
SHARP CONTRASTS OF SIMPLE ELEMENTS PRODUCE FRESH INTEREST.

1 **EXHIBITION HALL, BARCELONA. MIES VAN DER ROHE, ARCHITECT.**
GLASS IN CHROMIUM FRAMES AND SLABS OF FINE MARBLE USED AS FREE-STANDING PARTITIONS AFFORD AN INTERPLAY OF SURFACES AND COSTLY MATERIALS.

2 **LIVING ROOM, APARTMENT HOUSE IN STUTTGART. MIES VAN DER ROHE, ARCHITECT.**
LARGE PROPORTIONS AS APPLIED TO MINIMUM REQUIREMENTS.

3 **LIVING ROOM AND DINING ROOM, APARTMENT IN NEW YORK CITY. WILLIAM MUSCHENHEIM, ARCHITECT.**
WALL SURFACES HAVING PLANES OF COLOR GIVE ILLUSION OF SPACE IN USUAL CITY APARTMENT LAYOUT.

4 **DINING ROOM, APARTMENT IN VIENNA. ERNST PLISCHKE, ARCHITECT.**
SMOOTH GRASS CLOTH WALLS WITH BLACK GLASS BUILT-IN SIDEBOARD. DOWN LIGHTS SET IN HUNG CEILING EFFECTIVELY ILLUMINATE TABLE.

1 APARTMENT HOUSE AT PARC DES PRINCES, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
AN EXAMPLE OF AN ENTIRE FRONT IN GLASS AND GLASS BRICK. TENANTS IN THIS BUILDING WERE INVITED TO CHOOSE FROM SEVERAL DIFFERENT ARRANGEMENTS FOR THEIR FLATS, VERY MUCH AS THOUGH EACH WAS SO MUCH OFFICE SPACE. THIS METHOD RESULTED IN ROOM DISPOSITIONS WITHIN THE FLATS THAT WERE ALMOST COMPLETELY FREE OF SEPARATING WALLS.

2 LIVING ROOM AND TERRACE, APARTMENT, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
LARGE SLIDING GLASS PANELS OPENING ON TO THE TERRACE MORE INTIMATELY CONNECT THE SKY AND LANDSCAPE WITH THE LIVING SPACE. AN INTERESTING USE OF CLEAR AND OBSCURE GLASS IN THE SAME PANEL.

3 DINING ROOM, APARTMENT OF LE CORBUSIER, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS.
FINE RELATION OF PAINTINGS TO WALL AREAS. ACCENTUATION OF DOOR BY COLOR. MARBLE SLAB TABLE TOP, EFFECTIVE USE OF MATERIAL IN CONNECTION WITH TILE FLOOR.

1 ENTRANCE HALL, APARTMENT IN VIENNA. ERNST PLISCHKE, ARCHITECT.
A CAREFUL SOLUTION OF SIMPLE DETAILS.

2 CLUBROOM, TOKYO, JAPAN. ANTONIN RAYMOND, ARCHITECT.
A SUNKEN FIREPLACE FEATURE COMBINED WITH FINE WORKMANSHIP IN USE OF PLASTER, BRICK, TILE AND MOSAIC.

3 AN ARCHITECT'S STUDY, VIENNA. ERNST PLISCHKE, ARCHITECT.
A DRAFTING BOARD INCORPORATED IN A WALL CONTAINING FILES, TELEPHONE AND MATERIALS.

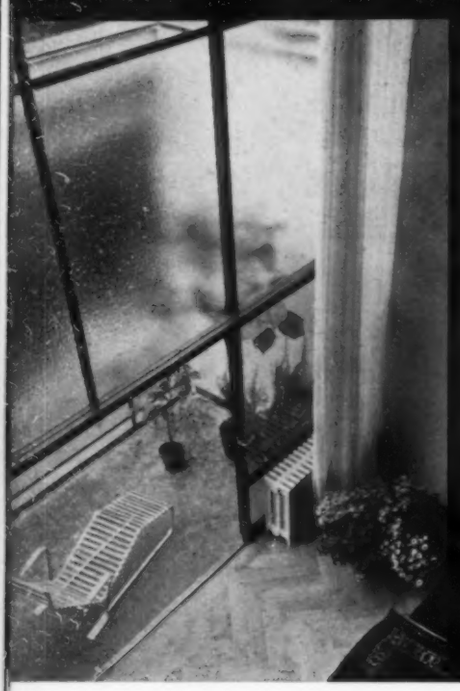
4 AN ARCHITECT'S STUDY, VIENNA. ERNST PLISCHKE, ARCHITECT.
LARGE PLANES GIVE AN ATMOSPHERE OF REPOSE.

1 LIVING ROOM, HOUSE OF F. V. FIELD, HARTFORD, CONNECTICUT. HOWE AND LESCAZE, ARCHITECTS.
A COMBINATION OF ALTERNATING FIXED SASH AND VENTILATING SASH. CORRECT RELATION OF SEAT AND DINING TABLE TO LIGHT.
Photo by Ralph Steiner.

2 HANDBALL COURT. OFFICE OF JOHN RUSSELL POPE, ARCHITECTS.
AESTHETIC RESULT WITH A PURELY UTILITARIAN SOLUTION.
Photo by R. M. Glasgow.

3 DINING ROOM, HOUSE OF ROBERT BROWN, CHESTNUT HILL, PHILADELPHIA. ROBERT BROWN, DESIGNER.
CAREFUL WORKMANSHIP IN THE USE OF WOOD SIDING AND METAL ACCESSORIES.
Photo by F. S. Lincoln.

4 LIVING ROOM, V. D. L. RESEARCH HOUSE, LOS ANGELES. RICHARD J. NEUTRA, ARCHITECT.
CLOSE CONNECTION BETWEEN EXTERIOR AND INTERIOR DEVELOPS NEW SENSE OF FREEDOM IN LIVING SPACE.

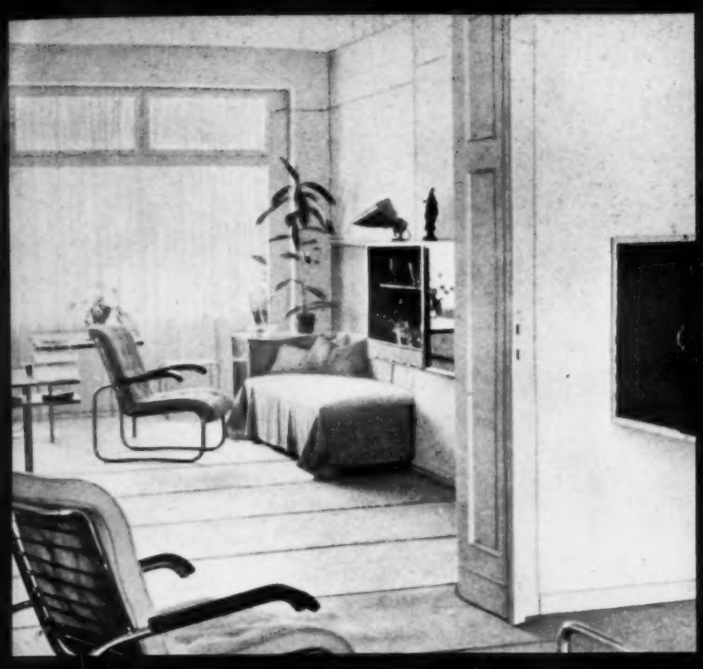


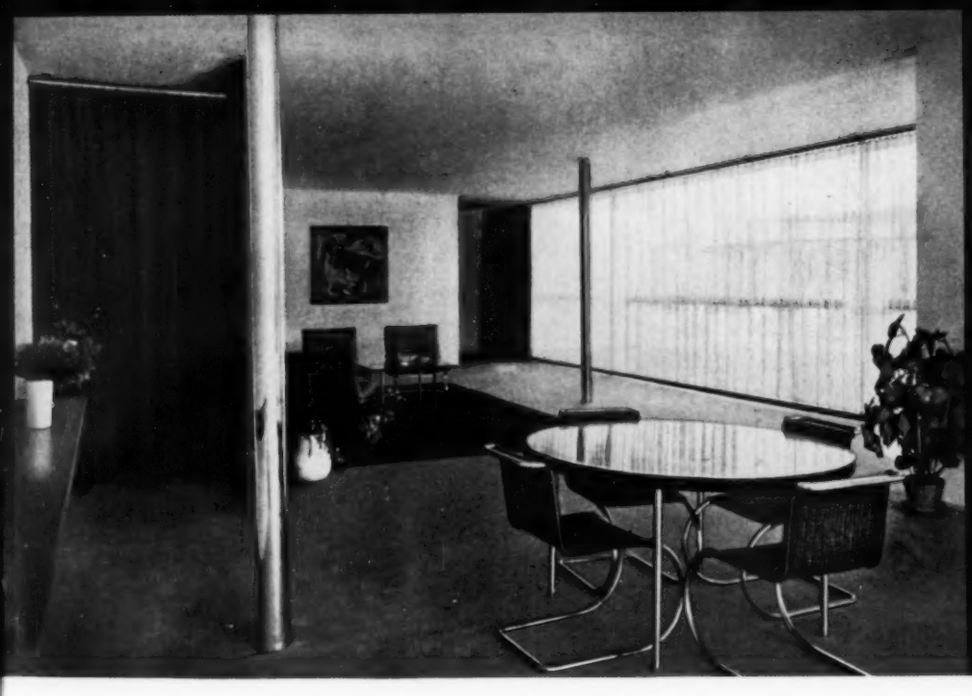
1 DINING ROOM, APARTMENT IN BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
A HARMONIOUS RESULT HAS BEEN ACHIEVED THROUGH THE USE OF OLD FURNITURE IN MODERN ARCHITECTURAL SURROUNDINGS.

2 APARTMENT FACADE, BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
THE ARCHITECTURAL TREATMENT OF AN APARTMENT HOUSE WITH UNBROKEN HORIZONTAL STRETCHES OF GLASS AND OPEN TERRACES FACING A PARK.

3 TERRACE, APARTMENT IN BASEL, SWITZERLAND. OTTO SENN AND RUDOLF MOCK, ARCHITECTS.
TERRACE AND LIVING ROOM BECOME ONE.

4 LIVING ROOM, APARTMENT OF J. A. DUNBAR, NEW YORK CITY. WILLIAM MUSCHENHEIM, ARCHITECT.
LARGE UNBROKEN SURFACES ACCENTUATE THE SENSE OF WARMTH IN UPHOLSTERED FURNITURE AND CARPETING.



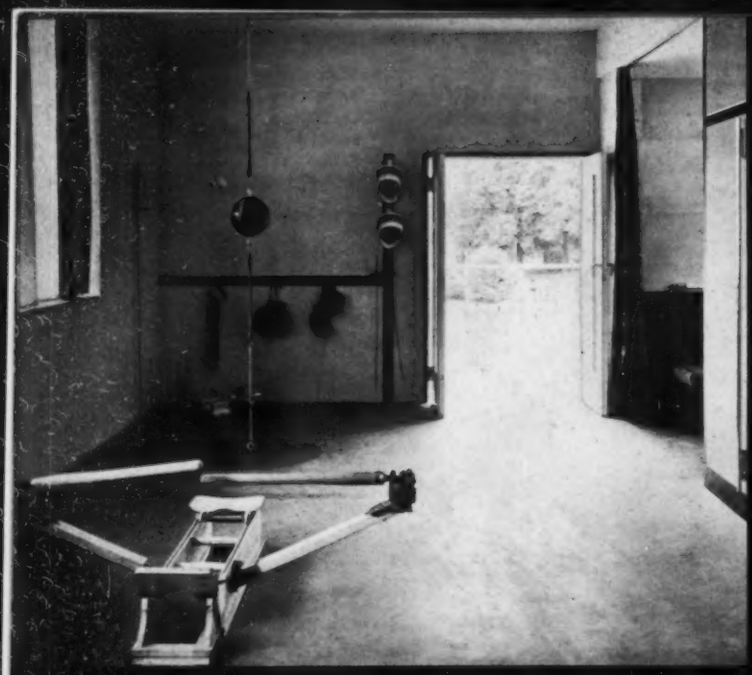


1 LIVING ROOM, APARTMENT IN BERLIN. MARCEL BREUER, ARCHITECT.
AN INTERIOR OF GREAT REFINEMENT BUT AT THE SAME TIME OF UTMOST RESTRAINT.
Photo, courtesy of Wohnraume der Gegenwart.

2 LIVING ROOM, HOUSE IN HAMBURG. KARL SCHNEIDER, ARCHITECT.
WELL-DESIGNED WOOD FRAMES WITH SLUNG SEATS.
Photo, courtesy of Wohnraume der Gegenwart.

3 DINING ROOM AND LIVING ROOM, HOUSE IN BERLIN. MIES VAN DER ROHE, ARCHITECT.
THE SUCCESSFUL MERGING OF ONE SPACE INTO THE OTHER THROUGH WALLS USED AS SCREENS AND AN ELIMINATION OF DOORS. THE STRUCTURAL SUPPORTS ARE FREE-STANDING AND NOT CONNECTED WITH THE WALLS. WALLS WERE ARRANGED TO FIT FURNITURE LAYOUT.
Photo, courtesy of Wohnraume der Gegenwart.

4 TERRACE, VAN DER LEEUW HOUSE, ROTTERDAM. BRINKMAN AND VAN DER VLUGT, ARCHITECTS.
HOUSE, TERRACE AND GARDEN BECOME ONE THROUGH USE OF MODERN STEEL FRAME CONSTRUCTION AND GLASS WALLS.

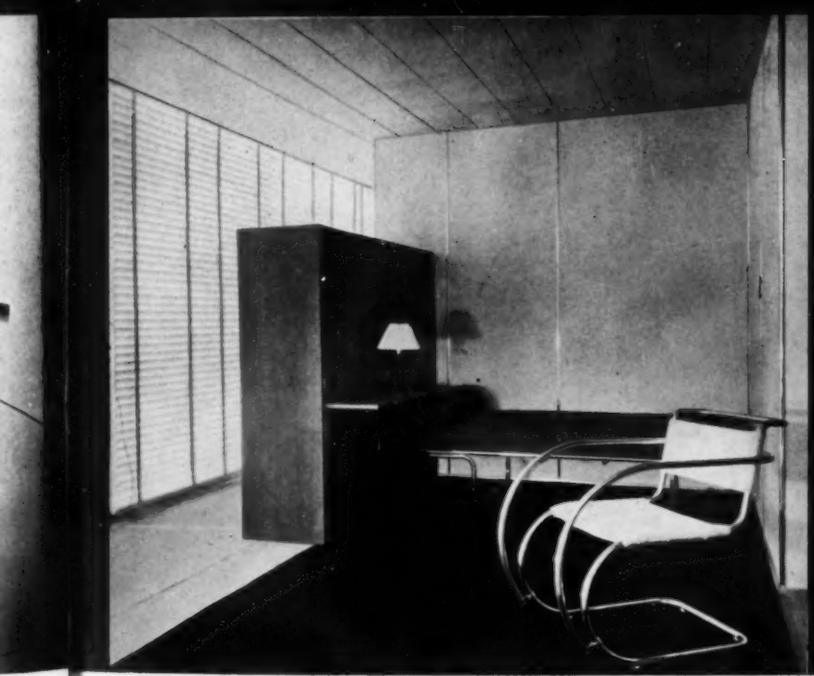


1 GYMNASIUM, HOUSE FOR AN AVIATOR.
PHYSICAL CULTURE APPARATUS IN THE DRESSING ROOM BECOMES PART OF THE EQUIPMENT OF THE MODERN HOME AND IS IN PLACE BECAUSE OF ITS INTRINSICALLY FUNCTIONAL DESIGN.

2 BATHROOM, SALON D'AUTOMNE, PARIS. LE CORBUSIER, P. JEANNERET AND CHARLOTTE PERRIAND, ARCHITECTS.
A LUXURIOUS ARRANGEMENT OF BATHROOM AND DRESSING ROOM WITH SPECIAL ATTENTION DEVOTED TO THE CONTRASTS OF MATERIALS SUCH AS TILE AND FUR, ALSO MIRRORS AND CHROMIUM.

3 SHIP'S CABIN. PAOLO MASERA, ARCHITECT.
A CABIN DESIGNED ENTIRELY WITH THE USE OF NONINFLAMMABLE MATERIALS.

4 KITCHEN, APARTMENT AT PALM SPRINGS, CALIFORNIA. A. LAWRENCE KOCHER AND ALBERT FREY.
A NEAT ARRANGEMENT OF SECTIONAL KITCHEN EQUIPMENT WITH NICE PLACEMENT OF WINDOWS AND VENTILATOR. CABINETS OF ENAMELED STEEL. WALLS OF COLORED TRANSITE.

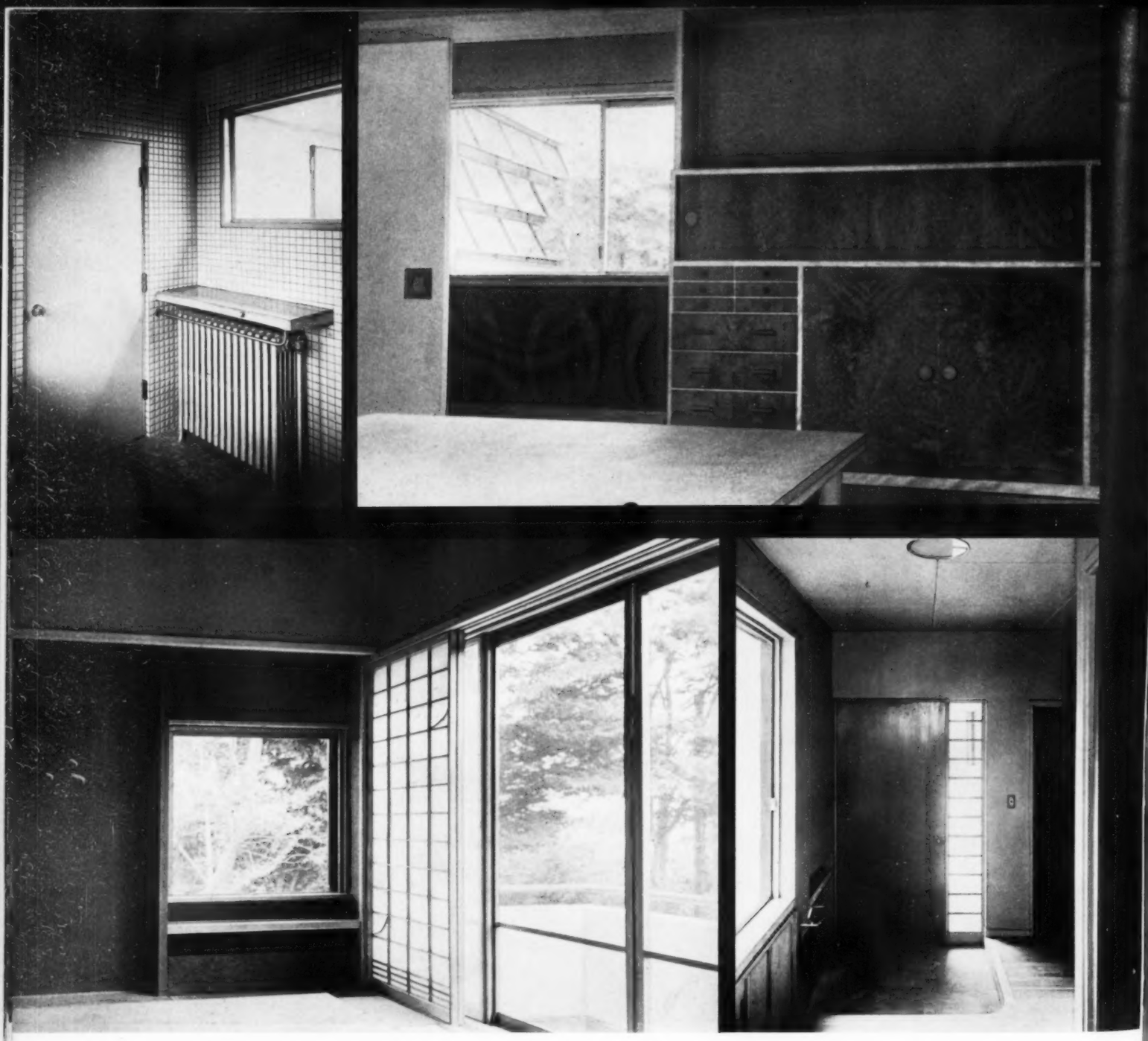


1 CRYSTAL HOUSE, CHICAGO. GEORGE F. KECK AND LELAND T. ATWOOD, ARCHITECTS.
PLANTS HAVE A NECESSARY PLACE IN THE SUNNY HOUSE.

2 CRYSTAL HOUSE, CHICAGO. GEORGE F. KECK AND LELAND T. ATWOOD, ARCHITECTS.
EXTERIOR WALLS ENTIRELY OF GLASS, ADJUSTABLE BLINDS TO CONTROL LIGHT. THERE ARE LARGE WOOD VENEER PANELS.

3 CRYSTAL HOUSE, CHICAGO. GEORGE F. KECK AND LELAND T. ATWOOD, ARCHITECTS.
WARDROBE USED AS PARTITION; ACOUSTICAL TILE CEILING.

4 SWIMMING POOL, FRANCE. MALLET - STEVENS, ARCHITECT.
RECREATIONAL FACILITIES CAN BE INCORPORATED IN THE MODERN APARTMENT HOUSE AND MADE TO HARMONIZE WITH THE GENERAL ARCHITECTURE.
Photo by Bonney.



1 BATHROOM, JAPAN. ANTONIN RAYMOND, ARCHITECT.
A VARIATION FROM THE CUSTOMARY USE OF TILE.

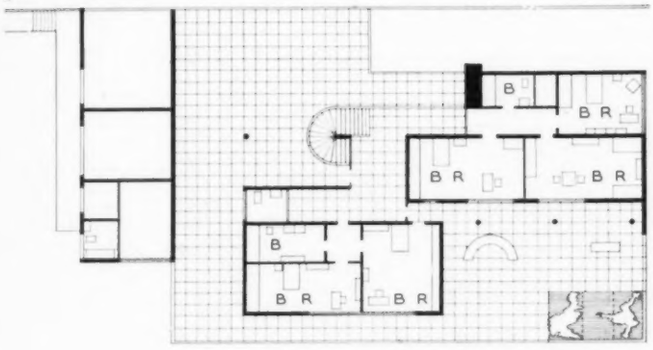
2 INTERIOR, JAPAN. ANTONIN RAYMOND, ARCHITECT.
BUILT-IN CUPBOARDS AND THEIR RELATION TO WALL. USE WAS MADE OF RARE WOOD VENEERS.

3 INTERIOR, JAPAN. ANTONIN RAYMOND, ARCHITECT.
TRADITIONAL JAPANESE INFLUENCE ON MODERN USE OF SLIDING SCREENS.

4 ENTRANCE HALL, JAPAN. ANTONIN RAYMOND, ARCHITECT.
METICULOUS APPLICATION OF SIMPLEST DESIGN ELEMENTS.

SOME APARTMENT FLOOR PLAN TYPES

1



1. ENTRANCE FLOOR, TUGENDHAT HOUSE, BRUNN, CZECHO-SLOVAKIA. MIES VAN DER ROHE, ARCHITECT. Easy grouping of rooms on roof terrace with respect to privacy, orientation, and furniture layout.

2. MAIN LIVING FLOOR, TUGENDHAT HOUSE, BRUNN, CZECHO-SLOVAKIA. MIES VAN DER ROHE, ARCHITECT. Large open living space subdivided for the purpose of its various functions by means of screen walls which are not connected with the structural columns. The two exterior walls facing the garden are entirely large sheets of plate glass.

3. APARTMENT, SALON D'AUTOMNE, PARIS. LE CORBUSIER AND P. JEANNERET, ARCHITECTS. All equipment and storage space on one side leaves a large unobstructed space as a living hall. Construction units and equipment standardized.

4. SUNLIGHT TOWERS APARTMENT, NEW YORK. A. LAWRENCE KOCHER AND GERHARD ZIEGLER, ARCHITECTS. The step-back plan affords maximum exposure to each room with minimum hall space in relation to room area. The plan is intended for separate towers or adjoining units.

5. WALK-UP APARTMENT, WEISSENHOF SIEDLUNG, STUTTGART. MIES VAN DER ROHE, ARCHITECT. Diversity of apartment layouts through different dispositions of light separating partitions. These are entirely independent of structure and can be readily changed.

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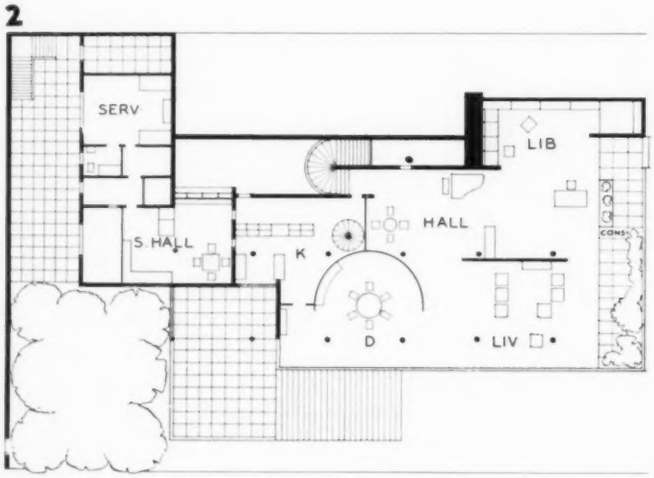

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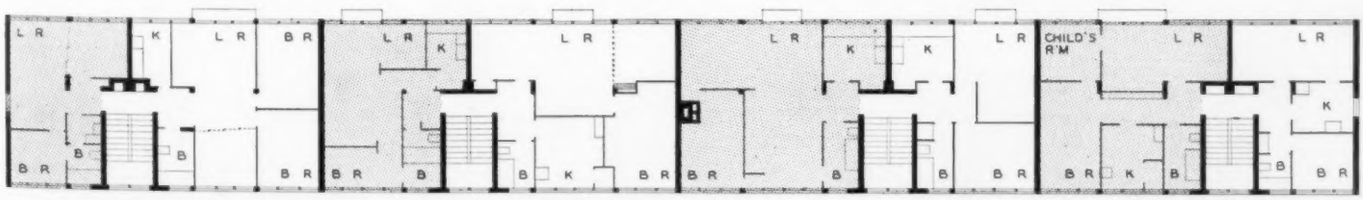
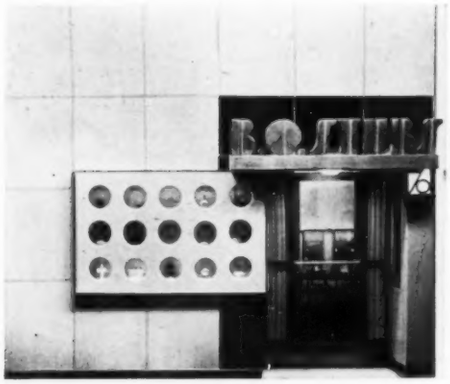
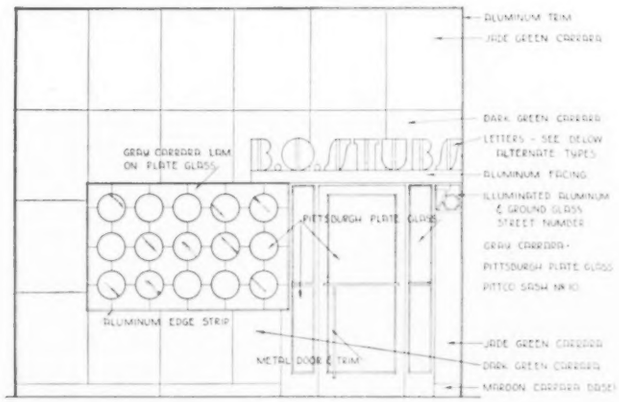
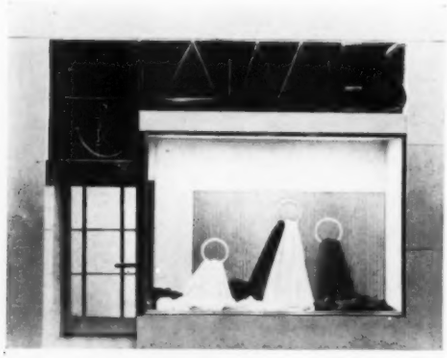


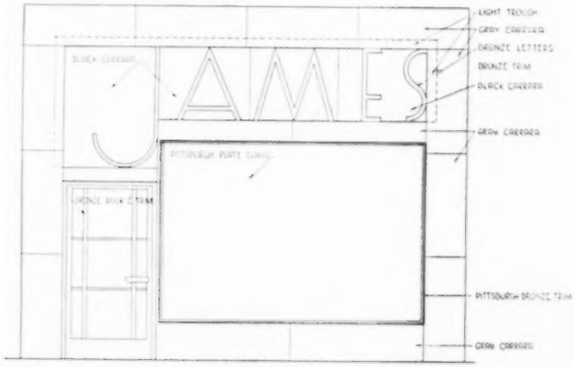
STORE FRONTS

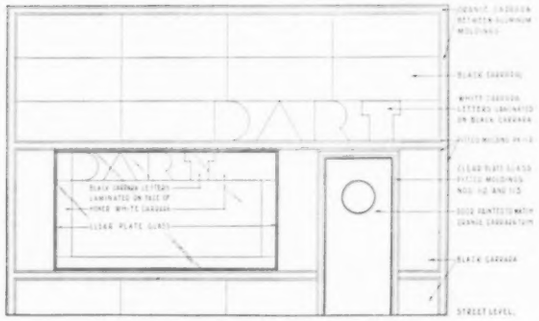
DEVELOPED AS MODELS BY PITTSBURGH PLATE GLASS COMPANY

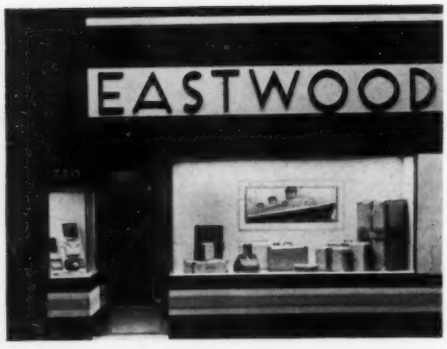


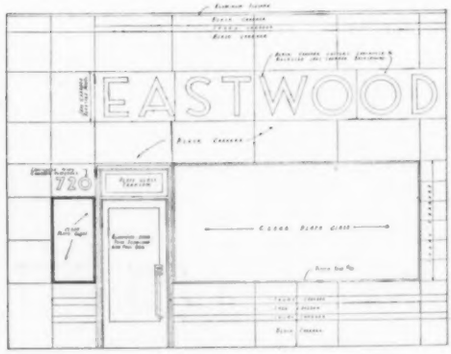




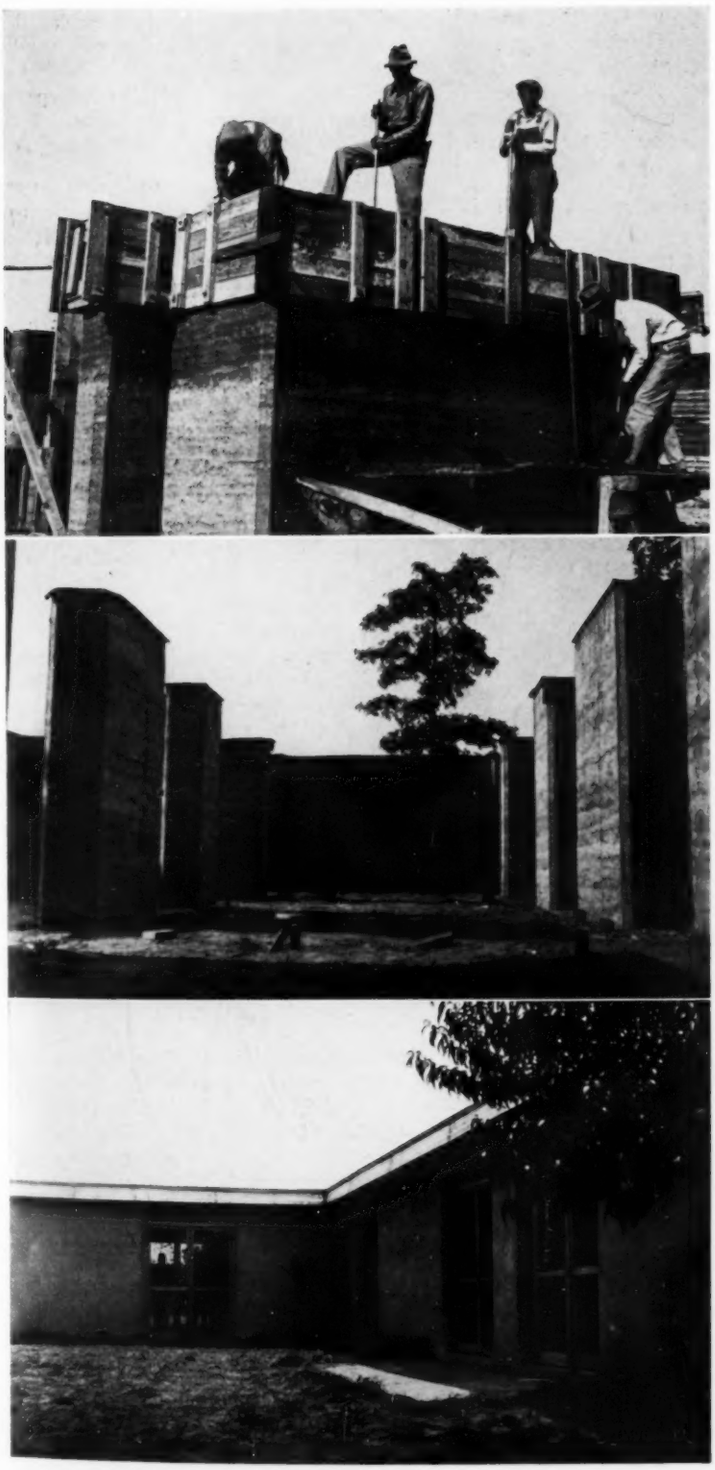








TECHNICAL NEWS AND RESEARCH



rammed earth houses — high cost ratio for labor, low for materials

HOUSES BUILT OF EARTH

Rammed earth construction has been used in all parts of the world since early Roman times; more recently in Germany, England, France and the Scandinavian countries. In this country considerable work has been done by Karl J. Ellington of Port Angeles, Washington; by W. E. Coffin and H. P. Humphrey of the U. S. Department of Agriculture, and by the State Agricultural College at Brookings, S. D. A number of buildings of rammed earth construction standing today in the United States were built in the pre-Revolution period.

At present the Resettlement Administration is building a group of rammed earth houses near Birmingham, Alabama. If the employment objective is to be reached with the limited funds available under the work relief appropriation, it is apparent that a maximum expenditure must be made for wages and a minimum for building materials. Investigation indicated that rammed earth construction would accomplish this, and at the same time provide low-cost housing units for rural or semi-urban areas. While the use of this type of construction is definitely limited, the assumption appears justified for experience to date shows a cost ratio approximately 65% for wages and 35% for materials. With more advanced building methods, approximately 70c of the construction dollar goes for material and equipment and only 30c for wages.

This new work in rammed earth construction—or pisé, as it is sometimes called—is under the direction of Thomas Hibben, architect and author of The Carpenter's Tool Chest (published 1933 by J. B. Lippincott Company, Philadelphia). The experimental houses and their mode of erection are described in a report on the following page.

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Bibliography: (1) *Journal of the British Ministry of Agriculture, London,* 1920. (2) *Special Report of the Building Research Board, Department of Scientific and Industrial Research, London.* (3) *Cottage Building in Cobb, Pisé Chalk and Clay, by Clough Williams-Ellis.* (4) *Modern Pisé Building, by Karl J. Ellington.* (5) *Lower Cost Buildings, by E. W. Coffin and H. B. Humphrey.* (6) *Bulletin 1500, U. S. Department of Agriculture.*

RAMMED EARTH CONSTRUCTION . . . . . Thomas Hibben, Architect

Materials: Three parts sand, two parts clay, one part coarse aggregate, 8 to 12 per cent water by weight. Aggregate may be slag, gravel, shale or crushed rock and should not exceed ¾". Test blocks of varying compositions, 30 days old and all containing 11% water, failed under the loads recorded below. The area under compression was 140 square inches in each case.

(1)	3	sand,	2	clay,	1	shale . . . 76,000 lb.
(2)	3	"	2	"	1	" . . . 56,000 lb.
(3)	3	"	2	"	1	" . . . 41,000 lb.
(4)	3	"	2	"	1	" . . . 96,000 lb.
(5)	3	"	2	"	1½	" . . . 76,500 lb.
(6)	6	"	4	"	1	" . . . 69,700 lb.
(7)	1	"	1	"	0	" . . . 27,400 lb.

The composition used averaged 480 lb. per square inch. A tougher and a more impervious wall can be made by the admixture of 8 gal. of emulsified asphalt per cubic yard of loose material. (This is equal to 15% of the weight of the 200 mesh material present in the mixture.)

Forms: These are made up of side panels and end gates, all of 2" lumber, well dried and straight. They may be lined with masonite or other hard-surfaced material if a perfectly smooth wall is desired but this is not necessary. Side panels are 30" high with vertical 2" x 4" braces 3' on center, and are held together by ½" W.I. bolts extending through the form at the top and bottom of each vertical brace; 2" x 4" loose spreaders are used to hold the panels apart until sufficient earth has been tamped in, after which they are removed. End gates are made the width of the desired wall and its full height from floor to plate, and are set between the side panel ends and strongly braced; these form the jambs and must be true and straight. When a single type of building is to be repeated it is advantageous to make a sufficient number of forms so that the entire wall can be raised simultaneously; on single unit construction a straight wall section, a tee, a right hand and a left hand corner ell are sufficient. Tampers are made from 15" long blocks of 4" x 10" long leaf yellow pine, one of the 10" faces being beveled so as to leave a tamping edge 10" x 1½"; the handle is ¾" W.I. pipe and the total weight approximately 18 lb.

Wall erection: Forms are set in place on concrete floor slab or footing courses checked for alignment and braced, and filled with 5" of mixed earth spread evenly. The tamper stands in the form and kneads the earth with the tamping tool into a solid mass, the fill being compressed in the process approximately 50 per cent. It should then present a dry hard upper surface which will ring when struck with a flat metal tamp. When the form has been filled by the tamping of successive 5" layers the bolts are drifted out and the side panels raised. Since the lower row of bolt holes is 6" above the bottom, the forms have a 6" apron extending down over the new wall, protecting it when tamping is resumed. The end gates remain in place throughout. Filling, tamping and raising of forms is continued until the wall has reached the desired height. After all forms are removed the upper surface of the wall is protected with a layer of tar and felt until the roof can be put in place.

Wall width: Although a 12" wall is satisfactory both for insulation and strength, not less than 15" is recommended as the smaller dimension cramps the workmen and reduces the working speed. The average rate of production is 2/3 cubic yards per man per day, counting all workmen engaged, whether tamping, mixing or raising forms.

Wall heights: Rammed earth has adequate bearing strength in direct compression (in excess of 30 tons per square foot) for any type of low building. The value of the material in tension or in bending is so small that all walls must be designed to receive direct compressing loads only. This controls the dimensions of columns as well as wall heights. Buildings can be raised to three or even four stories. There is no economic justification, however, for erecting walls above one story since the extra cost of raising the earth into forms at a greater height would more than offset the gains made in the use of the material.

Exterior finish: After the wall has dried about 30 days, exterior finish may be applied although a greater drying time is desirable. Any of the following finishes is satisfactory; all will require maintenance but such maintenance is inexpensive both as to material and labor costs. (1) Boiled linseed oil, with or without pigment. (2) Tung oil paint. (3) Sodium silicate. (4) Rough cast lime and cement mortar. (5) Casein whitewash consisting of 5 lb. casein, 3 lb. trisodium phosphate, one sack hydrated lime, 3 pints formaldehyde and 13 gallons of water, mixed in accordance with the directions of the National Lime Association. This whitewash should be applied to the shady side of the building and should be kept wet until set. When thoroughly dry, paint with cement in oil paint, also applied only on the shady side and kept wet. (There has not yet been time to test the permanence of this finish, but so far it appears satisfactory.)

Floor finishes: (1) Wood on sleepers or wood in mastic. (2) Quarry or other tile. (3) Linoleum or asbestos tile may be used over asphalt fill for the finished floor. (4) The concrete slab may be rubbed reasonably smooth with carborundum blocks and one coat of asphalt primer applied, followed by a coat of cold asphalt solution mixed with 50% screened sand. When dry cover with 28 x 32 count 5-ounce cotton cloth and finish with a coat of cold asphalt paste. (This finish likewise has not been fully tested as yet, but appears satisfactory.)

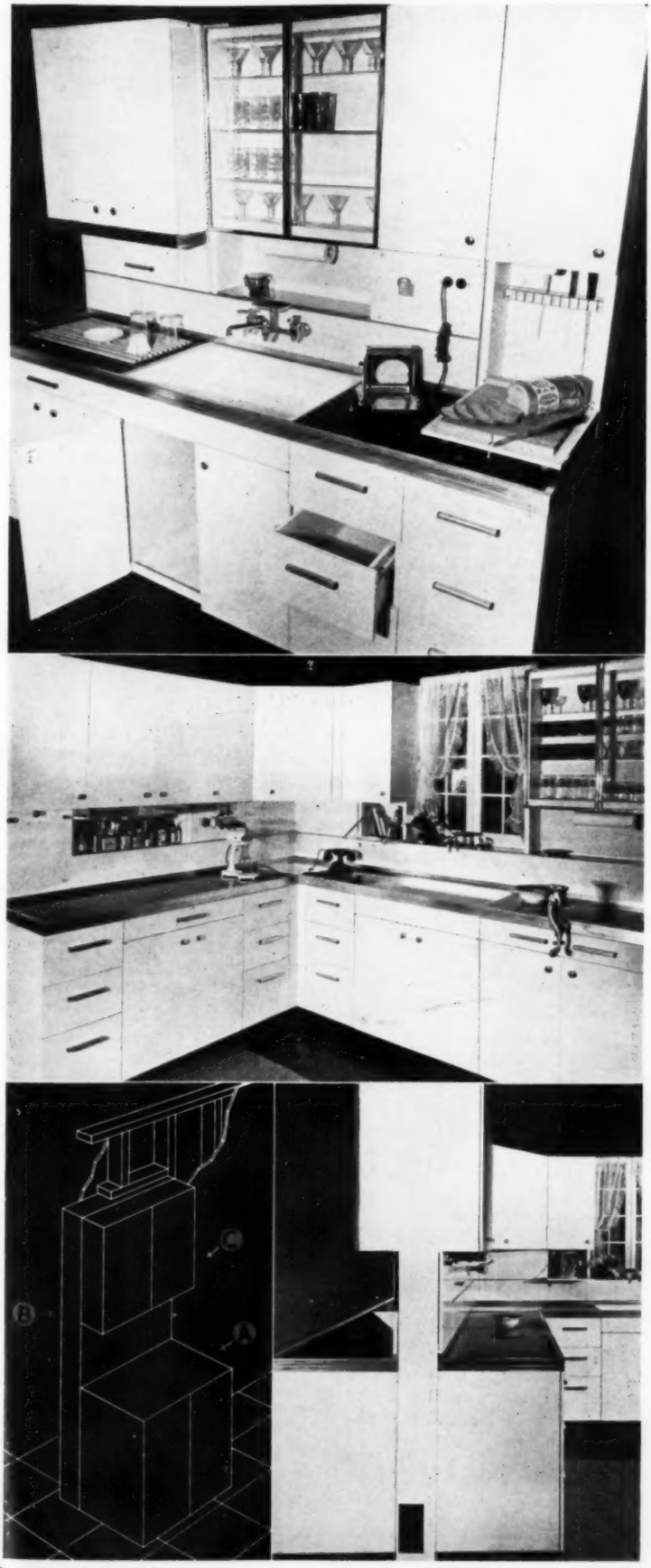
Roof construction: A wood plate on tar and felt sheet covers the whole width of the wall and is spiked into it with 30-penny nails. The joists are set flat, spaced according to the span and should extend beyond the face of the wall 18". Above they are covered with wood decking on which is laid dead level built-up tar and slag roof. Below they are stripped with 2" x 2" furring 16" on center, to which is attached gypsum plaster board or wire lath for a plastered ceiling. The exterior soffit is lathed with galvanized iron wire lath and finished with cement plaster. The facia may be either wood or sheet metal. Because of the stripping of the roof structure the inclosed space is entirely ventilated. Vent openings are provided in each room into the space and vent outlets under the soffit and above the roof; these are controlled with spring shutters. It has been found that by coloring the area around and over vent outlets black and the remaining roof white, the increased concentration of absorbed heat below the black area causes the air to rise in this portion, thus setting up a flow of air within the roof structure, which has a tendency to decrease the temperature of the ceiling.

Interior walls: Plaster direct to earth wall, any good interior plaster sand finish or white finish for paper.

Advantages: Extreme low thermal conductivity; the heat gain or loss through the wall is so negligible that it may be considered zero. Fire resistance. Termite resistance. Permanence. The cost does not exceed that for comparable wood construction.

Disadvantages: Slowness of construction.

House designs: Buildings of rammed earth must be simple, straight line. Since the material is crude, attempts at refinement or detail will be both costly and ineffective. In the experimental houses, all openings except the bathroom window are the full height of the wall and are provided with French doors to give maximum circulation of air.



Photographs by Ben Schnall

"packaged kitchens" — the wall is an integral part of the assembly

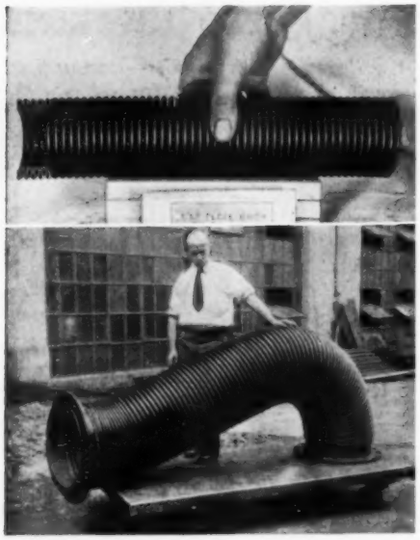
INTEGRATED KITCHENS

A system of kitchen units—standardized assemblies which can be framed into the wall construction to become an integral part of the building—has been developed by the Accessories Company, Inc., a division of American Radiator Company, 40 West 40 Street, New York, N. Y. They are the result of 7 years of research and experimentation by George Sakier, industrial designer, and are intended to round out a previously introduced line of bathroom units which combine fixtures and conveniences into interlocking wall panels. The units are now in production under the trade name of "Arcode Sectional Bathrooms and Kitchens."

The basic elements in the new kitchen units are shown in the diagram: in addition to the usual wall and base cabinets (A and C) the Arcode system provides a steel wall section (B), 7 feet high and capable of sustaining a bearing load of 7,000 pounds. The wall sections are assembled and framed into the house construction to form a solid armature for the rest of the kitchen assembly. Cabinets and equipment are then mounted direct on the wall sections. The rigidity of assembly gives an even alignment and prevents any distortion that might cause doors and drawers to become stuck. Not only do the wall sections carry their own load as well as the superimposed wall loads, they also provide cabinet space to a useful depth of 6½ inches. By adding one or more hanging units of the C type, cabinet depths of 13, 19½ and 26 inches are obtainable. The space is also utilized for pipe inclosures, wiring, heating and ventilating ducts.

Assemblies: The use of a module system—15, 20 and 35-inch spacings—permits considerable flexibility in arrangement with an essential simplicity in parts. Almost any desired combination of units and fixtures can be provided. The rear sides of the wall sections need only to be suitably finished (e.g., wall paper or a coat of paint applied directly to the steel) to form the wall of an adjacent room. Panels can even be reversed so as to open into an adjoining dinette.

Cost range: The large L-shaped kitchen with pantry back-up (see illustration) will retail about $500, the smaller straight-line assembly about $275. For houses costing $15,000 or more a "flush" cabinet construction is being marketed. For houses between $8,000 and $15,000 there is a less expensive type known as "stile" construction. For houses less than $8.000, several fixed combinations or "packages" will be sold through department stores at prices approximately a third more expensive than a comparable construction in wood.



flexible tubes of metal–⅛" to 40" diameters

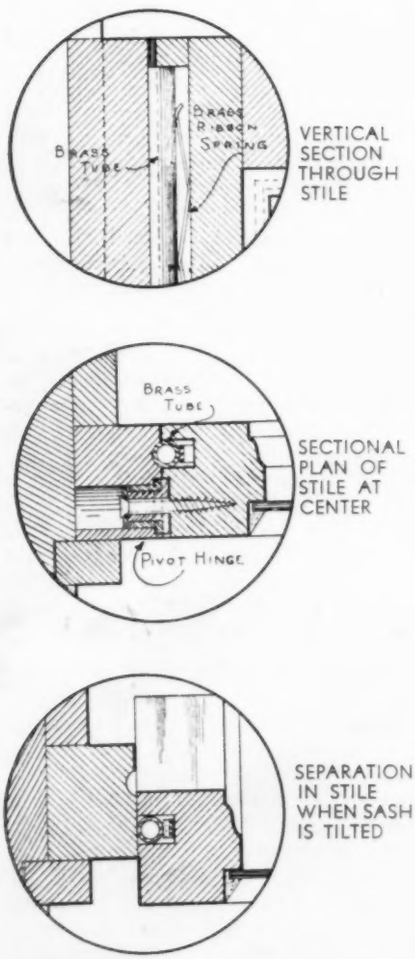
metal tubing like rubber

Produced by Metal Hose Division, Eclipse Aviation Corporation, 545 North Arlington Avenue, East Orange, N. J.

A flexible metal tubing has been developed which combines the useful characteristics of metal with the pliability of rubber. It can be made to resist pressures, temperatures and similar conditions against which rubber—even when reinforced—would prove of little value. It is made from conventional seamless tubing corrugated into bellows-like form with adjacent corrugations parallel to each other and rounded at the top and bottom. The hose derives its flexibility from these corrugations with their deep side walls, the degree of flexibility being controlled by the number of corrugations for each inch of hose and also by the wall thickness.

Sizes: In monel metal tubing it is produced in a variety of sizes from one-eighth of an inch to two inches in inside diameter. In steel it has been produced with inside diameters up to 40 inches. In some of the smaller sizes, it has been tested against pressures up to 3,000 pounds. The tubing is available also in nickel, 3 per cent silicon bronze and other corrosion-resistant materials.

Applications: The tubing has been found useful for carrying corrosive liquids and gases under pressure as well as for carriers for control wires in airplanes, motor boats and the like. In the building field it offers flexible connections for oil burner installations; air conditioning piping, pump and other hydraulic connections where it is desirable to absorb vibration and to prevent passage of noise; exhaust and other connections for diesel power plants.



tilting window sash

tilting double-hung windows

Developed by Jiffy-Kleen Corp. Produced by Carr, Ryder & Adams Co., Dubuque, Iowa.

By means of a pivoting device, the sash in ordinary double-hung windows can be tilted for indirect ventilation in any kind of weather and for easy cleaning of outside pane surfaces. When sash is not tilted, the window has its traditional appearance. The pivoting device is installed in the sash at the factory; it is adaptable to any standard frame and operates with any balancing device and any standard weatherstripping.

Mechanism: A seamless brass tube extends the entire height of sash. It rests in a slot in the stile. A concealed brass ribbon spring makes positive contact with a groove in upright pivot strip when window is closed, thus insuring weathertightness. The pivot hinge operates in conjunction with brass tube and spring. When sash is tilted, the tube rolls, acting the same as a roller bearing without wear on wood.

plywood without battens

Produced by Vancouver Plywood and Veneer Co., Vancouver, Washington.

A new plywood, known as Art-Ply, has been designed to do away with battens for covering joints between panels. Surfaces of the panels, which measure 4 x 8 feet, are grooved by special machinery. Into these grooves simple moldings are inlaid flush with the panel surface and are held fast with a water-resisting glue. Random plank, standard plank, rectangular plank and square tile patterns are thus obtainable in standardized 3-ply panels. The panels themselves are joined together by means of rabbetted edges; the joint is then concealed by a separate piece of molding.

air conditioning fan

Developed by General Electric Company, Air Conditioning Department (Sweet's Catalog File 26/9), Bloomfield, N. J. Designed and manufactured as integral parts of a line of air conditioners; not available as separate fan units.

A new fan, known as the "Aphonic Radial Flow Fan," creates the higher pressures required in central plant air conditioners by rotating the air so that each particle of it is subjected to centrifugal force. Although this principle is not new, it has been impractical heretofore to impart the required velocity to the air and to turn it at the same time through the required angles, without creating innumerable eddy currents and conflicts with the air stream; this turbulence causes unnecessary noise. To avoid turbulence, the air must be speeded up and turned at a uniform rate.

Mechanism: The air traverses the fan blades in a radial direction. This construction is distinguished from a propeller fan in that the blades are parallel to the shaft instead of at right angles, and because a "snail shaped" stationary housing, known as a scroll, is required. Die-cast aluminum blades are used. Air is drawn in at the center of the open end of the wheel and discharged tangentially into the scroll, which terminates in a rectangular discharge opening which connects to the supply duct system. Produced at present in two nominal diameters, 7" and 12", the wheels may be used singly or in pairs.